

# **Fishery Management Report No. 16-39**

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## **Report on Selected Sport Fisheries of the Kodiak Management Area, 2015**

by

**Tyler Polum**

December 2016

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Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



## Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in the following reports by the Divisions of Sport Fish and of Commercial Fisheries: Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, and Special Publications. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

|   |                    |  |   |   |                         |
|---|--------------------|--|---|---|-------------------------|
| <b>Weights and measures (metric)</b>    |                    | <b>General</b>                                   |   | <b>Mathematics, statistics</b>  |                         |
| centimeter                              | cm                 | Alaska Administrative Code                       | AAC   | <i>all standard mathematical signs, symbols and abbreviations</i>             |                         |
| deciliter                               | dL                 | all commonly accepted abbreviations              | e.g., Mr., Mrs., AM, PM, etc.               | alternate hypothesis  | $H_A$                   |
| gram                                    | g                  | all commonly accepted professional titles        | e.g., Dr., Ph.D., R.N., etc.                | base of natural logarithm   | $e$                     |
| hectare                                 | ha                 | at   | @   | catch per unit effort   | CPUE                    |
| kilogram                                | kg                 | compass directions:                              |   | coefficient of variation  | CV                      |
| kilometer                               | km                 | east   | E   | common test statistics  | (F, t, $\chi^2$ , etc.) |
| liter                                   | L                  | north  | N   | confidence interval   | CI                      |
| meter                                   | m                  | south  | S   | correlation coefficient (multiple)  | R                       |
| milliliter                              | mL                 | west   | W   | correlation coefficient (simple)  | r                       |
| millimeter                              | mm                 | copyright  | ©   | covariance  | cov                     |
|   |                    | corporate suffixes:                              |   | degree (angular)  | $^\circ$                |
| <b>Weights and measures (English)</b>   |                    | Company  | Co.   | degrees of freedom  | df                      |
| cubic feet per second                   | ft <sup>3</sup> /s | Corporation                                      | Corp.                                       | expected value  | $E$                     |
| foot                                    | ft                 | Incorporated                                     | Inc.  | greater than  | >                       |
| gallon                                  | gal                | Limited  | Ltd.  | greater than or equal to  | $\geq$                  |
| inch                                    | in                 | District of Columbia                             | D.C.  | harvest per unit effort   | HPUE                    |
| mile                                    | mi                 | et alii (and others)                             | et al.                                      | less than   | <                       |
| nautical mile                           | nmi                | et cetera (and so forth)                         | etc.  | less than or equal to   | $\leq$                  |
| ounce                                   | oz                 | exempli gratia (for example)                     | e.g.  | logarithm (natural)   | ln                      |
| pound                                   | lb                 | Federal Information Code                         | FIC   | logarithm (base 10)   | log                     |
| quart                                   | qt                 | id est (that is)                                 | i.e.  | logarithm (specify base)  | log <sub>2</sub> , etc. |
| yard                                    | yd                 | latitude or longitude                            | lat or long                                 | minute (angular)  | '                       |
|   |                    | monetary symbols (U.S.)                          | \$, ¢                                       | not significant   | NS                      |
| <b>Time and temperature</b>             |                    | months (tables and figures): first three letters | Jan,...,Dec                                 | null hypothesis   | $H_0$                   |
| day                                     | d                  | registered trademark                             | ®   | percent   | %                       |
| degrees Celsius                         | °C                 | trademark  | ™   | probability   | P                       |
| degrees Fahrenheit                      | °F                 | United States (adjective)                        | U.S.  | probability of a type I error (rejection of the null hypothesis when true)    | $\alpha$                |
| degrees kelvin                          | K                  | United States of America (noun)                  | USA   | probability of a type II error (acceptance of the null hypothesis when false) | $\beta$                 |
| hour                                    | h                  | U.S.C.   | United States Code                          | second (angular)  | "                       |
| minute                                  | min                | U.S. state                                       | use two-letter abbreviations (e.g., AK, WA) | standard deviation  | SD                      |
| second                                  | s                  |  |   | standard error  | SE                      |
| <b>Physics and chemistry</b>            |                    |  |   | variance  |                         |
| all atomic symbols                      |                    |  |   | population  | Var                     |
| alternating current                     | AC                 |  |   | sample  | var                     |
| ampere                                  | A                  |  |   |   |                         |
| calorie                                 | cal                |  |   |   |                         |
| direct current                          | DC                 |  |   |   |                         |
| hertz                                   | Hz                 |  |   |   |                         |
| horsepower                              | hp                 |  |   |   |                         |
| hydrogen ion activity (negative log of) | pH                 |  |   |   |                         |
| parts per million                       | ppm                |  |   |   |                         |
| parts per thousand                      | ppt, ‰             |  |   |   |                         |
| volts                                   | V                  |  |   |   |                         |
| watts                                   | W                  |  |   |   |                         |

***FISHERY MANAGEMENT REPORT NO. 16-39***

**REPORT ON SELECTED SPORT FISHERIES OF THE KODIAK  
MANAGEMENT AREA, 2015**

by  
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December 2016

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## ABSTRACT

This report provides a detailed summary of the sport fisheries occurring within the Kodiak Management Area and includes a description of the management area and programs related to area management objectives. Included for each sport fishery are an historical overview (dating back to 2006) for comparative purposes, a review of current management strategies, and recent fisheries performance. Escapement information is presented through 2016 for salmon fisheries when available.

Key words: Kodiak Management Area, Kodiak Regulatory Area, Alaska Peninsula–Aleutian Islands Regulatory Area, Kodiak Road Zone, Kodiak Remote Zone, stocked lakes, enhancement projects, escapement, Chinook salmon, *Oncorhynchus tshawytscha*, coho salmon, *O. kisutch*, sockeye salmon, *O. nerka*, steelhead, rainbow trout, *O. mykiss*, halibut, *Hippoglossus stenolepis*, rockfish, *Sebastes* spp., lingcod, *Ophiodon elongatus*, Alaska Board of Fisheries

## INTRODUCTION

This report provides a summary of the sport fisheries occurring within the Kodiak Management Area (KMA). Included is a description of the components of the management area and programs related to area management objectives. Fisheries are described and organized by regulatory areas and subunits, species, and specific locations. An historical overview and description of each fishery, historical harvests and salmon escapements, management objectives and implementation strategies, and fishery performance are discussed. Estimates of harvest for all fisheries are presented through 2015 (2016 estimates are unavailable) and estimates of escapement in all salmon fisheries are presented through 2015. Weir counts through 2016 are included to give the most recent information, and estimates of escapement for 2016 are presented in some cases where harvest estimates are unnecessary. Many estimates of escapement rely on harvest estimates and will be presented in future reports. Fisheries occurring in 2016 are only discussed when complete information is available.

## DIVISION OF SPORT FISH STRATEGIC PLAN

The guiding document for the Alaska Department of Fish and Game (ADF&G), Division of Sport Fish (SF) continues to be the Strategic Plan (ADF&G), which highlights key issues currently facing SF and acts as a guide for division leaders in decision-making. The plan is also used to communicate internally as well as with the public about the most important issues for SF and the management of Alaska's sport fisheries, and it is updated periodically to reflect future issues and needed changes in strategic direction. Annual work plans and budget submissions are also linked to this plan based on regional needs and priorities.

## MANAGEMENT AREA DESCRIPTION

The Kodiak Management Area (KMA) (Figure 1) includes the following: 1) all freshwater drainages and adjacent marine waters of Alaska circumjacent to the Kodiak Archipelago, 2) all waters of Alaska on the south side of the Alaska Peninsula, including Pacific Ocean drainages west of the longitude of Cape Douglas, 3) waters on the north side of the Alaska Peninsula, including Bering Sea drainages south of the latitude of Cape Menshikof, and 4) all waters of Alaska circumjacent to the Aleutian Islands, including the Pribilof Islands. With the exception of a number of road-accessible fisheries located on Kodiak, Unalaska, and Adak islands and near the community of Cold Bay on the Alaska Peninsula, virtually all significant sport fishing opportunities in the KMA are remote and relatively difficult to access. A coastal climate with high precipitation and mild temperatures characterizes much of the KMA.

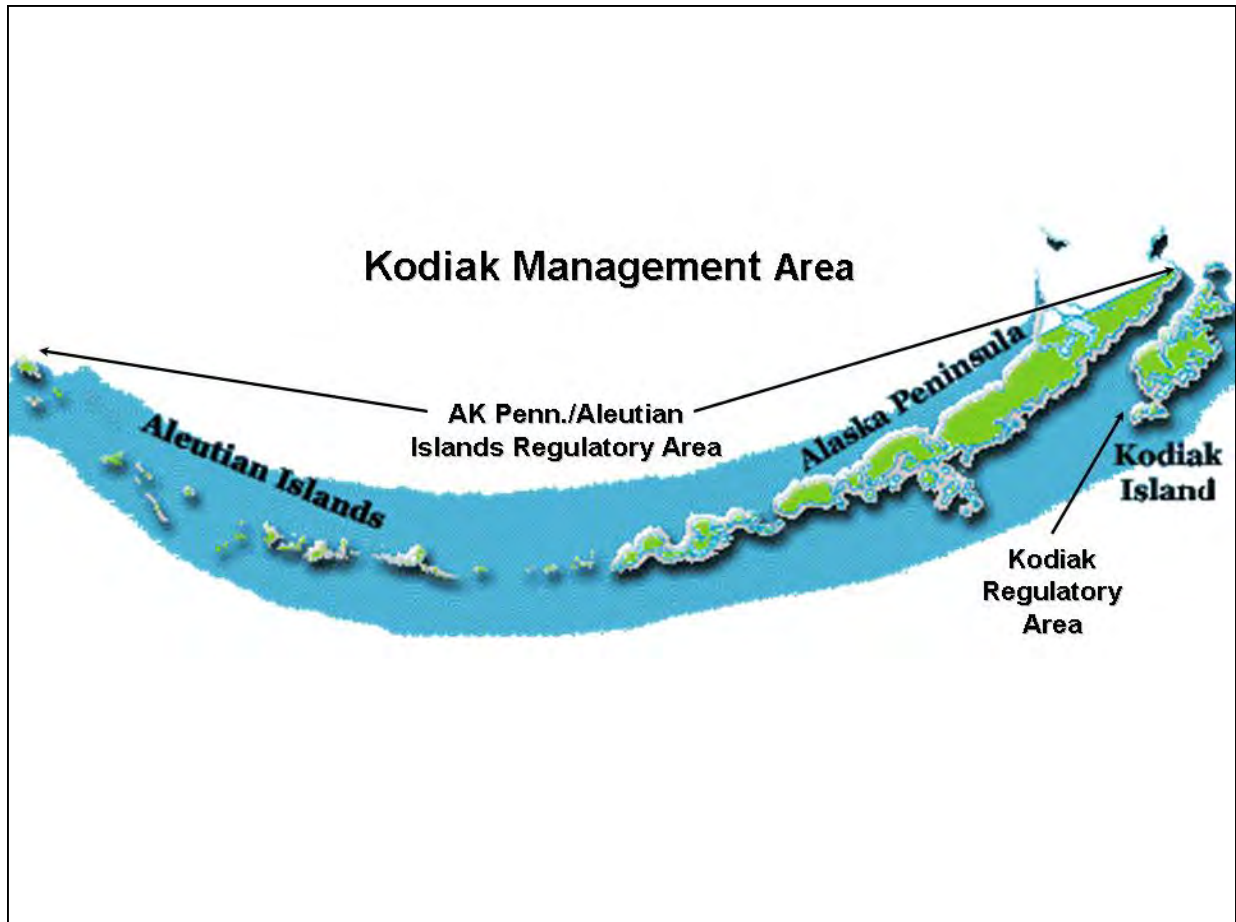


Figure 1.–Map of the Kodiak Management Area.

Principal land managers in the KMA include the United States Fish and Wildlife Service (USFWS), National Park Service (NPS), United States Forest Service (USFS), various Alaska Native corporations, and the State of Alaska.

The communities of Kodiak and Dutch Harbor–Unalaska, with current populations of approximately 13,000 and 4,350 respectively, are the 2 largest communities within the KMA, which also encompasses approximately 20 small villages.

The SF management and research operations within the KMA are administered through ADF&G’s Southcentral Region and are based in the Kodiak Area Office. During the time span addressed in this report, area staff members stationed in Kodiak included 2 permanent full-time Fishery Biologists, 1 seasonal Biologist, 1 Program Technician, and several seasonal Fish and Wildlife Technicians. Additional support for the Kodiak office is provided through the regional headquarters office based in Anchorage. Programmatic functions of the Kodiak office include operating salmon counting weirs, collecting and analyzing biological samples, conducting angler creel and salmon escapement surveys, and implementing sport fisheries enhancement projects.

## **FISHERY DEVELOPMENT AND REGULATION**

The KMA is composed of 2 sport fishing regulatory areas: the Kodiak Regulatory Area (KRA) and the Alaska Peninsula–Aleutian Islands Regulatory Area (AP–AIRA). The KRA is further divided by regulation into the “Kodiak Road Zone” and the “Kodiak Remote Zone” (Figures 2

and 3). Codified regulations governing sport fisheries of the KMA are established in Chapter 64, Title 5 of the Alaska Administrative Code. Regulations pertaining to AP–AIRA fisheries are contained in Chapter 65 of the same title. Regulatory provisions of the KMA not specified in these 2 chapters may be found in the Chapter 75 administrative code pertaining to statewide regulation of Alaska sport fisheries.

Fisheries regulations for the KMA are developed within the established Alaska Board of Fisheries (BOF) process. Public input concerning regulation changes and fishery allocation issues is accommodated in this process through various means including submission of proposals, direct testimony to the BOF, and participation in local fish and game advisory committee (AC) meetings. The ACs have been established throughout Alaska specifically to provide a conduit for public access to the BOF, and to assist the BOF in addressing fisheries issues. SF serves as technical advisor both at AC and BOF meetings. In this way, the meetings provide for direct public interaction with ADF&G staff involved with fish resource issues of local concern. Within the KMA, there are 7 ACs: Kodiak, Chignik, King Cove, False Pass, Nelson Lagoon, Sand Point, and Unalaska–Dutch Harbor. Under the current operating schedule, the BOF meets on a 3-year cycle for particular geographic areas and fish resource groupings. Regulatory proposals concerning KMA sport fisheries were most recently addressed in February 2014 (KRA) and February 2016 (AP–AIRA), although no changes were made in the most recent KRA meeting. The next regularly scheduled BOF meeting to address KMA issues is scheduled for January 2017 (KRA). Summaries of recent BOF regulatory actions are provided in Appendix A1.

## **MANAGEMENT PLANS**

In order to resolve allocation conflicts between or within user groups while instituting effective conservation measures, the BOF may institute fishery-specific management plans and policies to guide ADF&G. These plans attempt to assure sustained yield of fish resources in conjunction with the establishment of allocations based on management actions and guidelines. A description of current regulatory management plans specific to sport fisheries occurring within the KMA is provided in Appendix B1.

## **OVERALL SPORT FISHING EFFORT, HARVEST, AND CATCH**

Since 1977, sport angler effort in the KMA has been estimated using the Statewide Harvest Survey (SWHS), an annual mail-out survey that contacts approximately 10% of the state sport fishing license recipients (Jennings et al. 2011). The current SWHS estimates total days of sport fishing effort (referred to as “angler-days”) expended by anglers fishing Alaskan waters, plus angler catch and harvest. Estimates of catch and harvest provide an estimate of numbers released (catch minus harvest). The survey is designed to provide total estimates of effort, catch, and harvest by fishing location, but does not estimate effort directed toward a single species. In addition to the SWHS, on-site creel surveys have been selectively used in the KMA for fisheries that require more detailed information or inseason management. Those statistics are detailed elsewhere in this report where appropriate, whereas the following summary of KMA sport fishing effort, catch, and harvest is based solely on the SWHS results<sup>1</sup>.

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<sup>1</sup> Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2016). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>

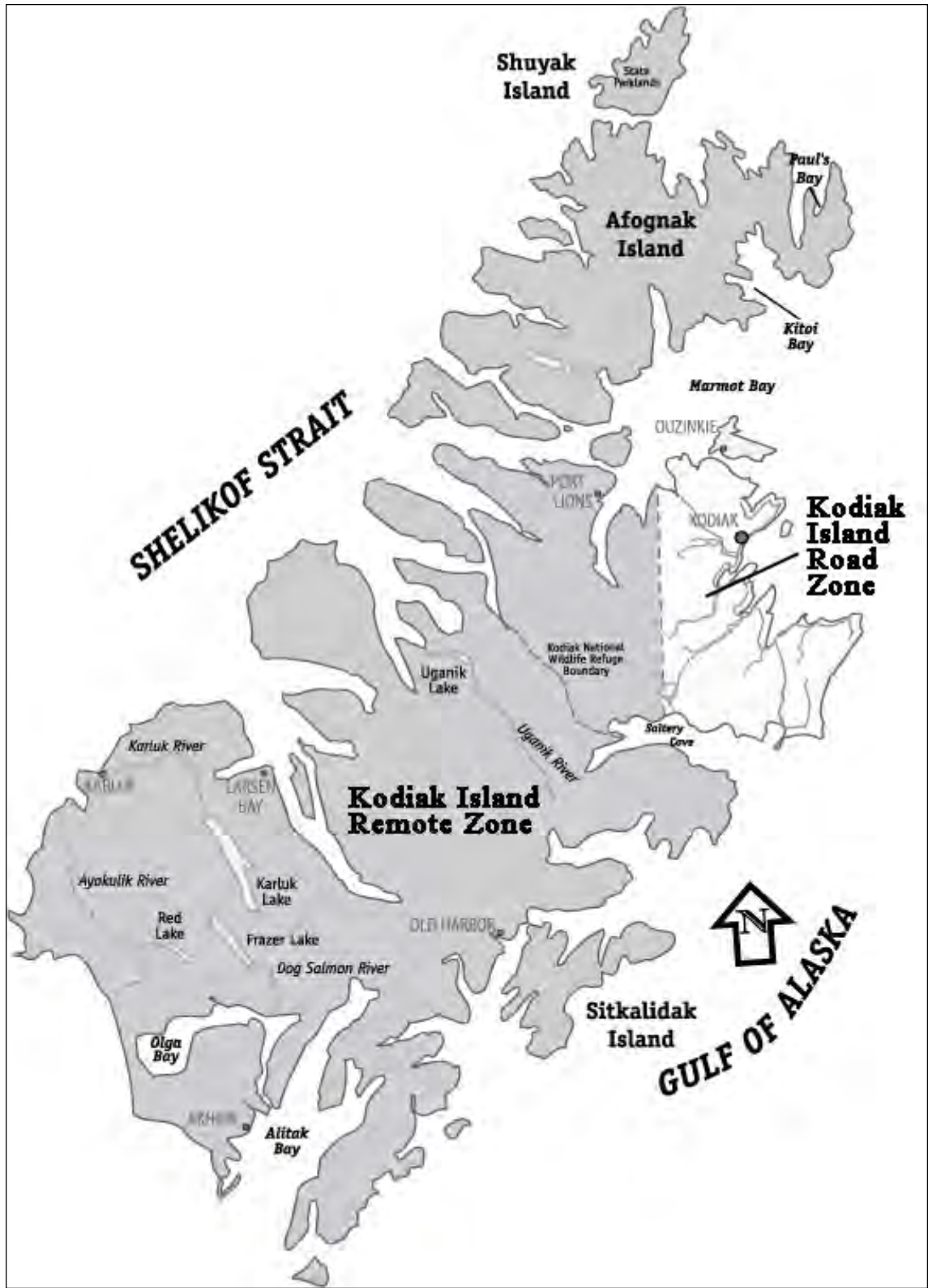


Figure 2.—Kodiak Regulatory Area (KRA) including the Road Zone and the Remote Zone.

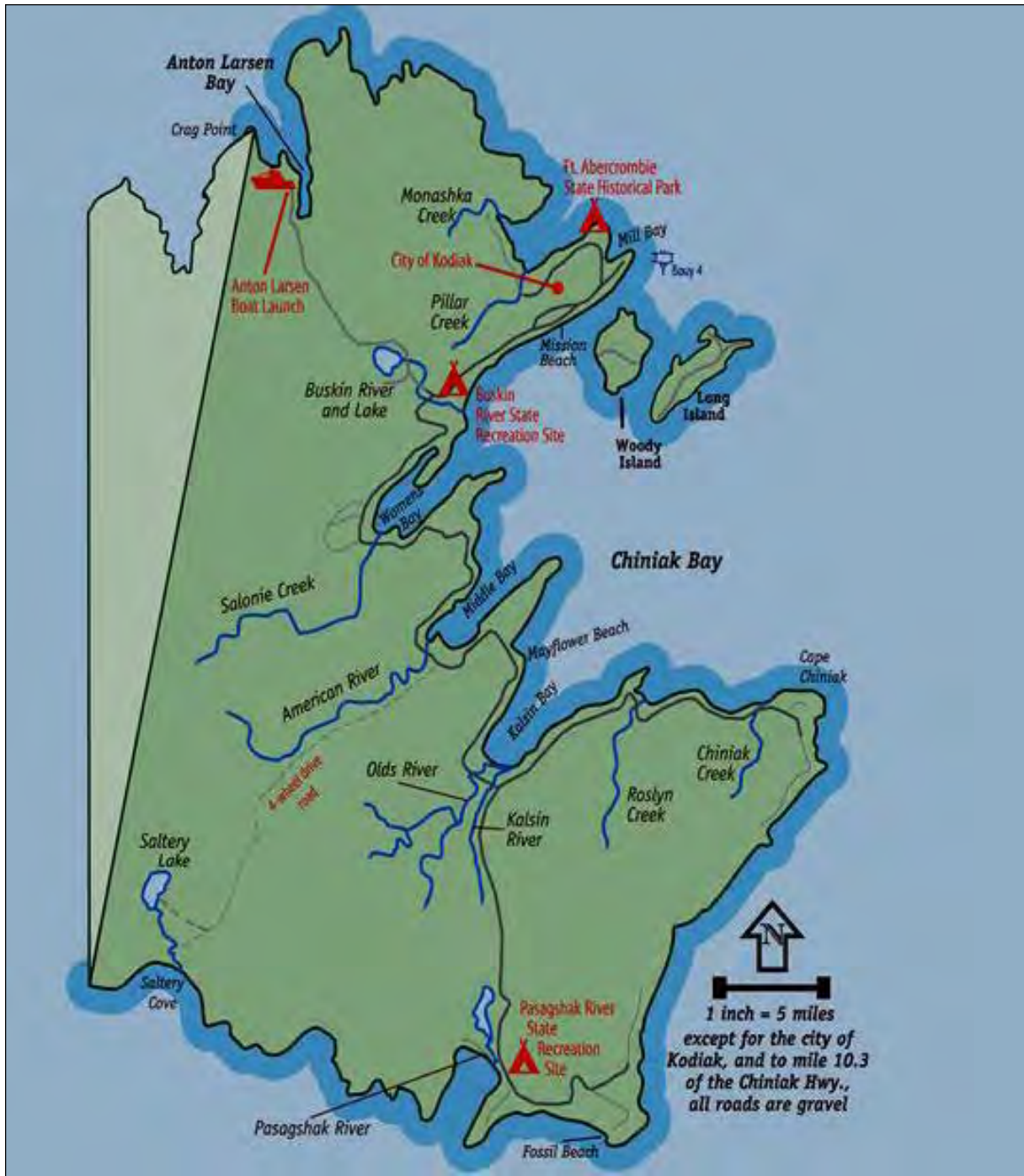


Figure 3.—Kodiak Road Zone.

The KMA is composed of 1 complete SWHS reporting area plus a portion of another. These areas include the following: 1) the entire Kodiak Area reporting unit (Area Q), and 2) part of the Naknek River drainage–Alaska Peninsula reporting unit (Area R). Area R SWHS statistics pertinent to the KMA include those from sport fisheries occurring within and around the Alaska Peninsula south of a line from Cape Douglas to Cape Menchikof and also the Aleutian Islands.

## **Effort**

An average of 113,418 angler-days of effort were expended annually by anglers fishing KMA waters from 2006 through 2015 (Table 1). Historically, the effort expended by KMA anglers has represented an average of approximately 4% of the statewide total and 6% of total effort within the Southcentral Region<sup>2</sup>. During this 10-year period, KRA angler effort peaked at 131,709 angler-days in 2007. During 2015, total KMA effort represented about 7% of the total Southcentral Region angling effort and about 5% of the statewide effort.

Anglers fishing the KRA, which includes nearly all major fisheries within the KMA, expended an average of 98,679 angler-days from 2006 through 2015 (Table 1), representing about 87% of the total effort in KMA waters. A total of 102,894 angler-days were spent in this area during 2015.

Major fisheries in the KRA occur in both fresh and salt waters along the Kodiak Road Zone, which typically accounts for about 75% of the area's total effort (Table 2). From 2006 to 2015, drainages within this area supported an average of 72,485 angler-days of fishing effort. The Buskin River, accessible from Kodiak's main roadway, is the most heavily fished drainage in the KRA, averaging 16,632 angler-days of effort for the same period (Table 2). Other major fisheries within the KRA are also road accessible and include the Saltery River and Pasagshak River drainages. Most of the KRA marine waters fishery occurs adjacent to the road system near the community of Kodiak.

Anglers fishing the AP–AIRA from 2006 through 2015 expended an average of 14,739 angler-days of effort (Table 1). This level of effort has represented an average of 13% of the total effort in KMA waters during the same period (Table 1). A total of 14,705 angler-days were expended in the AP–AIRA during 2015. Major AP–AIRA fisheries occur in the Chignik River drainage, rivers in the vicinity of Cold Bay, and on the Unalaska road system. Other relatively significant fisheries consist of several drainages frequented by remote lodge operators based near Port Moller and Nelson Lagoon on the Alaska Peninsula. Due to the remote location and corresponding high cost to access most fishing destinations within the AP–AIRA, overall angler effort is modest by comparison to the remainder of the KMA to the extent that during most years, estimates of effort are unavailable in individual locations due to a lack of respondents.

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<sup>2</sup> ADF&G, Division of Sport Fish, Southcentral Region (i.e., Region II) includes the following management areas: Anchorage Area, Bristol Bay, Kodiak–Aleutians, Lower Cook Inlet (Kenai), Northern Cook Inlet (Matanuska–Susitna), Prince William Sound Area, Seward–North Gulf Coast, and Upper Kenai Peninsula.



Table 1.—Total angler-days of sport fishing effort expended in Kodiak Management Area waters, 2006–2015.

| Regulatory area                                | Waters      | Parameter   | Year    |         |         |         |        |        |         |         |         |         | 10-year average |
|--|-------------|-------------|---------|---------|---------|---------|--------|--------|---------|---------|---------|---------|-----------------|
|  |             |             | 2006    | 2007    | 2008    | 2009    | 2010   | 2011   | 2012    | 2013    | 2014    | 2015    |                 |
| Alaska Peninsula–Aleutian Islands <sup>a</sup> |             |             |         |         |         |         |        |        |         |         |         |         |                 |
|  | Salt water  |             |         |         |         |         |        |        |         |         |         |         |                 |
|  |             | Angler-days | 7,201   | 11,944  | 7,734   | 7,303   | 5,297  | 4,616  | 9,037   | 5,342   | 7,848   | 7,768   | 7,409           |
|  |             | Percent     | 57%     | 58%     | 50%     | 38%     | 42%    | 43%    | 61%     | 50%     | 49%     | 53%     | 50%             |
|  | Fresh water |             |         |         |         |         |        |        |         |         |         |         |                 |
|  |             | Angler-days | 5,431   | 8,555   | 7,600   | 11,990  | 7,302  | 6,243  | 5,809   | 5,342   | 8,088   | 6,937   | 7,330           |
|  |             | Percent     | 43%     | 42%     | 50%     | 62%     | 58%    | 57%    | 39%     | 50%     | 51%     | 47%     | 50%             |
|  | Area total  |             | 12,632  | 20,499  | 15,334  | 19,293  | 12,599 | 10,859 | 14,846  | 10,684  | 15,936  | 14,705  | 14,739          |
|  | % of KMA    |             | 12%     | 16%     | 13%     | 17%     | 13%    | 11%    | 15%     | 8%      | 13%     | 13%     | 13%             |
| Kodiak Island <sup>a</sup>                     |             |             |         |         |         |         |        |        |         |         |         |         |                 |
|  | Salt water  |             |         |         |         |         |        |        |         |         |         |         |                 |
|  |             | Angler-days | 45,502  | 53,222  | 52,219  | 47,333  | 40,377 | 36,809 | 42,374  | 52,867  | 44,127  | 51,107  | 46,594          |
|  |             | Percent     | 48%     | 48%     | 51%     | 49%     | 50%    | 44%    | 50%     | 45%     | 40%     | 50%     | 47%             |
|  | Fresh water |             |         |         |         |         |        |        |         |         |         |         |                 |
|  |             | Angler-days | 49,722  | 57,988  | 49,820  | 49,619  | 41,082 | 47,620 | 43,032  | 63,325  | 66,858  | 51,787  | 52,085          |
|  |             | Percent     | 52%     | 52%     | 49%     | 51%     | 50%    | 56%    | 50%     | 55%     | 60%     | 50%     | 53%             |
|  | Area total  |             | 95,224  | 111,210 | 102,039 | 96,952  | 81,459 | 84,429 | 85,406  | 116,192 | 110,985 | 102,894 | 98,679          |
|  | % of KMA    |             | 88%     | 84%     | 87%     | 83%     | 87%    | 89%    | 85%     | 92%     | 87%     | 87%     | 87%             |
| KMA total <sup>a</sup>                         |             |             | 107,856 | 131,709 | 117,373 | 116,245 | 94,058 | 95,288 | 100,252 | 126,876 | 126,921 | 117,599 | 113,418         |

Source: Statewide Harvest Survey (SWHS) estimates from the Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2016). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>

<sup>a</sup> Does not include the Barren Islands or Ugashik, Naknek, or Egegik drainage streams reported in the SWHS as Alaska Peninsula Drainages.

Table 2.—Total angler-days of sport fishing effort expended in the Kodiak Regulatory Area by drainage, 2006–2015.

| Regulatory area              | Drainage                              | Year          |                |                |               |               |               |               |                |                |                | Average       |
|------------------------------|---------------------------------------|---------------|----------------|----------------|---------------|---------------|---------------|---------------|----------------|----------------|----------------|---------------|
|                              |                                       | 2006          | 2007           | 2008           | 2009          | 2010          | 2011          | 2012          | 2013           | 2014           | 2015           |               |
| Kodiak Road System           |                                       |               |                |                |               |               |               |               |                |                |                |               |
|                              | Buskin River & Lake                   | 19,875        | 17,124         | 15,068         | 18,695        | 13,365        | 13,879        | 13,996        | 21,497         | 20,015         | 12,808         | 16,632        |
|                              | Pasagshak R & Lk Rose Tead            | 3,259         | 7,091          | 7,733          | 8,161         | 5,170         | 7,372         | 8,457         | 6,596          | 4,782          | 5,534          | 6,416         |
|                              | Olds River <sup>a</sup>               | 5,247         | 6,994          | 3,362          | 4,826         | 4,653         | 4,421         | 3,829         | 7,432          | 10,739         | 7,977          | 5,948         |
|                              | American River                        | 3,648         | 6,597          | 4,602          | 3,760         | 4,362         | 4,601         | 2,850         | 5,448          | 5,236          | 5,947          | 4,705         |
|                              | Saltery Cove Freshwater               | 2,460         | 2,196          | 4,127          | 3,204         | 3,453         | 3,947         | 2,101         | 5,601          | 6,644          | 3,693          | 3,743         |
|                              | Other roadside lakes                  | 861           | 848            | 496            | 1,033         | 651           | 2,152         | 847           | 2,558          | 2,637          | 3,556          | 1,564         |
|                              | Other roadside streams <sup>b</sup>   | 5,286         | 5,642          | 5,299          | 3,525         | 3,634         | 4,212         | 5,195         | 8,391          | 7,084          | 7,084          | 5,535         |
|                              | Chiniak Bay Boat                      | 18,754        | 28,480         | 32,098         | 23,866        | 16,006        | 17,139        | 17,859        | 16,017         | 18,940         | 24,915         | 21,407        |
|                              | Ugak Bay Boat                         | –             | –              | –              | 905           | 1,133         | 1,112         | 3,209         | 2,839          | 2,844          | 2,358          | 2,057         |
|                              | Other roadside boat                   | 1,812         | 1,449          | 1,964          | 2,898         | 384           | 660           | 18            | 228            | 1,228          | 3,180          | 1,382         |
|                              | Other roadside shoreline <sup>c</sup> | 3,101         | 2,357          | 1,393          | 2,840         | 4,019         | 2,041         | 4,085         | 10,988         | 1,095          | 5,210          | 3,713         |
|                              | <b>Total</b>                          | <b>64,303</b> | <b>78,778</b>  | <b>76,142</b>  | <b>73,713</b> | <b>56,830</b> | <b>61,536</b> | <b>62,446</b> | <b>87,595</b>  | <b>81,244</b>  | <b>82,262</b>  | <b>72,485</b> |
| Kodiak Remote Area           |                                       |               |                |                |               |               |               |               |                |                |                |               |
|                              | Karluk River System                   | 2,896         | 5,311          | 2,302          | 2,541         | 1,095         | 2,125         | 990           | 1,167          | 860            | 1,621          | 2,091         |
|                              | Ayakulik (Red) River System           | 2,807         | 1,482          | 1,905          | 1,210         | 960           | –             | –             | –              | 2,066          | –              | 1,738         |
|                              | Other remote lakes                    | 149           | 644            | 604            | 322           | 452           | 335           | –             | 846            | 400            | 143            | 433           |
|                              | Other remote streams                  | 3,234         | 4,059          | 4,322          | 1,782         | 3,287         | 3,228         | 3,289         | 4,329          | 4,954          | 3,009          | 3,549         |
|                              | Boat- Afognak Island Area             | 5,488         | 6,550          | 6,226          | 4,521         | 6,199         | 3,619         | 3,629         | 6,968          | 5,471          | 3,413          | 5,208         |
|                              | Shuyak Island Boat                    | 1,549         | 729            | –              | 1,924         | –             | 837           | –             | –              | –              | –              | 1,260         |
|                              | Uyak Bay Boat                         | 2,417         | 3,246          | 3,156          | 3,415         | 2,933         | 1,627         | –             | 3,475          | 3,389          | 2,862          | 2,947         |
|                              | Other remote boat <sup>d</sup>        | 6,997         | 7,779          | 6,444          | 4,157         | 7,871         | 3,698         | 6,068         | 5,899          | 5,950          | 6,606          | 6,147         |
|                              | Other remote shore                    | 1,027         | 1,545          | 742            | 789           | 1,632         | 1,052         | 505           | –              | 779            | –              | 1,009         |
|                              | <b>Total</b>                          | <b>26,564</b> | <b>31,345</b>  | <b>25,701</b>  | <b>20,661</b> | <b>24,429</b> | <b>16,521</b> | <b>14,481</b> | <b>22,684</b>  | <b>23,869</b>  | <b>17,654</b>  | <b>22,391</b> |
| <b>Regulatory area total</b> |                                       | <b>95,224</b> | <b>111,210</b> | <b>102,039</b> | <b>96,952</b> | <b>81,459</b> | <b>84,429</b> | <b>85,406</b> | <b>116,192</b> | <b>110,985</b> | <b>102,894</b> | <b>98,679</b> |

Source: Statewide Harvest Survey (SWHS) estimates from the Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2016). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>

Note: An en dash means insufficient survey responses to generate an estimate.

<sup>a</sup> Olds River includes unidentified Kalsin Bay streams.

<sup>b</sup> Includes Russian River and unspecified streams.

<sup>c</sup> Roadside shoreline includes Chiniak Bay shoreline and unspecified roadside shoreline sites.

<sup>d</sup> Other remote boat includes unspecified remote sites.

## Harvest

From 2006 through 2015, an average of 150,827 fish were harvested by anglers fishing KMA waters (Table 3). Halibut (*Hippoglossus stenolepis*), coho salmon (*Oncorhynchus kisutch*), and Chinook salmon (*O. tshawytscha*) accounted for about 19%, 24%, and 7% of the 10-year average harvest, respectively. In 2015, a total of 170,363 fish were harvested by anglers in KMA waters (Table 3). During the same year, the coho salmon harvest (44,421 fish) was above the recent 10-year average (35,299 fish) and harvest of halibut (19,104 fish) was well below the 10-year average (28,877 fish).

Other species harvested in relatively large numbers between 2006 and 2015 included pink salmon (*O. gorbushka*) and sockeye salmon (*O. nerka*), which respectively averaged 11,103 and 17,716 fish (Table 3). During 2015, the total sockeye salmon harvest of 23,068 was above the 10-year average but below the previous year's record-high harvest of 28,884. Pink salmon harvests were slightly above the 10-year average in 2015, at 13,630 fish.

## Catch

Estimates available from the SWHS of the total number of fish caught (harvest plus release) by anglers fishing KMA waters indicate that although release to harvest ratios vary substantially by species, overall between 2006 and 2015, an average of 2.65 fish were released for every 1 harvested. Pink salmon, chum salmon (*O. keta*), Dolly Varden (*Salvelinus malma*), and rainbow trout (*O. mykiss*) were the most frequently released fish species during 2015 and also in previous years (Table 4). In both KRA and AP–AIRA waters during 2006–2015, the number of fish caught and released was greater than the number of fish harvested.

## CHINOOK SALMON FISHERIES

Chinook salmon runs to the KMA are made up of a relatively small number of stocks and collectively make a minor contribution to total Chinook salmon production in Alaska. KRA stocks are found only in the Karluk River and Ayakulik River drainages but historically have been the most abundant populations within the entire management area. AP–AIRA stocks are more numerous and include populations in the Chignik, King Salmon, Meshik, Nelson, Ilnik, Sandy, and Cinder rivers plus several other drainages. Exploitation rates by anglers on AP–AIRA stocks are low to the extent that during most years, SWHS estimates of catch and harvest by drainage are unavailable. By comparison, angler interest in the stocks of the Karluk and Ayakulik rivers historically has been greater, which is probably a result of lower access costs and more convenient travel logistics.

Although a variety of users have historically harvested KMA Chinook salmon runs, including freshwater and marine sport, commercial, and subsistence fisheries, the primary interest in utilizing these stocks has been from sport fishing anglers. Currently, a formal allocation of the Chinook salmon harvest has been established only for the marine waters sport fishery within the KRA (*Kodiak Area Salt Water King Salmon Sport Fishery Management Plan*, 5 AAC 64.060; Appendix B1).

Table 3.—Numbers of fish harvested by all anglers fishing Kodiak Management Area waters, 2006–2015.

| Category   | Species                 | Year    |         |         |         |         |         |         |         |         |         | 10-year average |
|------------|-------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-----------------|
|            |                         | 2006    | 2007    | 2008    | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    |                 |
| Salmon     |                         |         |         |         |         |         |         |         |         |         |         |                 |
|            | Pink                    | 11,533  | 19,484  | 9,189   | 13,856  | 6,253   | 7,159   | 11,676  | 10,542  | 7,705   | 13,630  | 11,103          |
|            | Coho                    | 34,935  | 38,780  | 36,927  | 39,669  | 30,047  | 30,843  | 25,204  | 32,788  | 39,376  | 44,421  | 35,299          |
|            | Sockeye                 | 6,866   | 16,002  | 19,477  | 14,438  | 14,004  | 12,087  | 16,157  | 26,213  | 28,844  | 23,068  | 17,716          |
|            | Chinook                 | 12,437  | 12,226  | 10,263  | 9,354   | 7,416   | 8,393   | 7,957   | 9,951   | 9,170   | 9,938   | 9,711           |
|            | Chum                    | 591     | 579     | 773     | 2,239   | 901     | 447     | 714     | 702     | 406     | 608     | 796             |
| Marine     |                         |         |         |         |         |         |         |         |         |         |         |                 |
|            | Clams                   | 1,910   | 219     | 2,762   | 2,401   | 1,925   | 918     | 3,888   | 939     | 2,363   | 1,483   | 1,881           |
|            | Halibut                 | 28,049  | 38,956  | 37,718  | 34,839  | 25,415  | 23,089  | 26,690  | 28,520  | 26,387  | 19,104  | 28,877          |
|            | Rockfish                | 12,773  | 14,050  | 16,884  | 16,512  | 20,660  | 15,907  | 20,747  | 21,113  | 31,177  | 27,872  | 19,770          |
|            | Lingcod                 | 2,482   | 4,060   | 3,665   | 3,978   | 4,013   | 4,248   | 4,105   | 4,543   | 5,022   | 3,065   | 3,918           |
|            | Black cod <sup>b</sup>  |         |         |         |         | 948     | 871     | 1,205   | 1,021   | 865     | 2,309   | 1,203           |
|            | Smelt                   | 47      | 0       | 629     | 0       | 178     | 1,214   | 0       | 346     | 92      | 0       | 251             |
| Freshwater |                         |         |         |         |         |         |         |         |         |         |         |                 |
|            | Dolly Varden            | 8,198   | 9,988   | 9,869   | 6,169   | 6,198   | 5,341   | 2,886   | 4,786   | 5,578   | 6,242   | 6,526           |
|            | Arctic Grayling         | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 40      | 0       | 4               |
|            | Rainbow trout           | 84      | 285     | 203     | 85      | 284     | 596     | 66      | 302     | 246     | 541     | 269             |
|            | Steelhead               | 181     | 62      | 52      | 141     | 24      | 6       | 69      | 30      | 27      | 52      | 64              |
|            | Other fish <sup>a</sup> | 3,345   | 6,648   | 10,694  | 13,067  | 13,859  | 18,664  | 16,150  | 14,948  | 23,824  | 18,030  | 13,923          |
| Total      |                         | 123,431 | 161,339 | 159,105 | 156,748 | 132,125 | 129,783 | 137,514 | 156,744 | 181,122 | 170,363 | 150,827         |

Source: Statewide Harvest Survey (SWHS) estimates from the Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2016). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>

<sup>a</sup> Includes shark, shrimp, skate, Pacific cod, Tanner crab, Dungeness crab, landlocked salmon and other unspecified species.

<sup>b</sup> Black cod not included in SWHS prior to 2010.

Table 4.—Numbers of fish caught by all anglers fishing Kodiak Management Area waters, 2006–2015.

| Category                | Year           |                |                |                |                |                |                |                |                |                | 10-year average |
|-------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|
|                         | 2006           | 2007           | 2008           | 2009           | 2010           | 2011           | 2012           | 2013           | 2014           | 2015           |                 |
| <b>Salmon</b>           |                |                |                |                |                |                |                |                |                |                |                 |
| Pink                    | 82,237         | 123,907        | 61,574         | 83,153         | 39,001         | 47,319         | 65,563         | 82,822         | 43,109         | 76,220         | 70,491          |
| Coho                    | 70,482         | 67,608         | 73,198         | 80,133         | 53,129         | 55,147         | 42,028         | 54,100         | 77,351         | 97,046         | 67,022          |
| Sockeye                 | 17,132         | 42,391         | 48,273         | 30,668         | 22,277         | 25,808         | 25,855         | 42,188         | 44,672         | 32,418         | 33,168          |
| Chinook                 | 23,907         | 26,037         | 16,960         | 16,908         | 12,184         | 16,867         | 15,182         | 16,066         | 16,903         | 20,890         | 18,190          |
| Chum                    | 6,414          | 12,244         | 10,406         | 16,013         | 10,862         | 9,244          | 7,802          | 6,800          | 10,439         | 17,777         | 10,800          |
| <b>Marine</b>           |                |                |                |                |                |                |                |                |                |                |                 |
| Clams                   | 1,910          | 219            | 2,762          | 2,401          | 1,925          | 918            | 3,888          | 939            | 2,363          | 1,483          | 1,881           |
| Halibut                 | 48,674         | 65,174         | 71,379         | 59,787         | 43,589         | 44,235         | 43,698         | 44,874         | 41,922         | 31,505         | 49,484          |
| Rockfish                | 29,148         | 36,791         | 41,633         | 42,675         | 49,729         | 33,216         | 40,667         | 35,429         | 49,978         | 47,431         | 40,670          |
| Lingcod                 | 4,112          | 6,497          | 6,656          | 7,897          | 6,369          | 7,254          | 6,323          | 6,353          | 7,493          | 6,044          | 6,500           |
| Black cod <sup>b</sup>  |                |                |                |                | 1,936          | 1,526          | 1,958          | 1,774          | 1,879          | 3,680          | 2,126           |
| Smelt                   | 47             | 0              | 629            | 0              | 178            | 1,339          | 19             | 346            | 301            | 0              | 286             |
| <b>Freshwater</b>       |                |                |                |                |                |                |                |                |                |                |                 |
| Dolly Varden            | 56,689         | 74,979         | 76,552         | 43,189         | 50,933         | 47,843         | 26,238         | 48,447         | 57,547         | 50,581         | 53,300          |
| Arctic grayling         | 307            | 65             | 0              | 0              | 0              | 20             | 56             | 0              | 1,650          | 0              | 210             |
| Rainbow trout           | 3,683          | 4,900          | 2,960          | 2,082          | 3,679          | 8,441          | 1,932          | 4,570          | 4,157          | 5,677          | 4,208           |
| Steelhead               | 3,192          | 2,307          | 3,102          | 1,559          | 927            | 2,216          | 569            | 717            | 2,255          | 3,118          | 1,996           |
| Other fish <sup>a</sup> | 14,258         | 16,160         | 28,493         | 34,080         | 41,065         | 46,324         | 36,591         | 33,418         | 49,685         | 38,793         |                 |
| <b>Total</b>            | <b>362,192</b> | <b>479,279</b> | <b>444,577</b> | <b>420,545</b> | <b>337,783</b> | <b>347,717</b> | <b>318,369</b> | <b>378,843</b> | <b>411,704</b> | <b>432,663</b> | <b>393,367</b>  |

Source: Statewide Harvest Survey (SWHS) estimates from the Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2016). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>

<sup>a</sup> Includes Shark, Shrimp, Skate, Pacific Cod, Tanner Crab, Dungeness Crab, landlocked salmon and other unspecified species.

<sup>b</sup> Black cod not included in SWHS prior to 2010.

The primary management objective for KMA Chinook salmon stocks is to achieve established escapement goals (EG). Several of the major Chinook salmon runs are monitored annually for escapement using weirs, whereas spawning assessment of other stocks has been limited to escapement index counts obtained from aerial surveys. To ensure EGs are attained, fishery managers may limit angler harvests by reducing daily and seasonal bag limits, prohibiting bait, and reducing time and areas open to fishing (Appendix C1). Stocks that consistently fall below EG levels may be closed to sport fishing. Conversely, Chinook salmon sport fishing regulations may be liberalized by emergency order (EO) whenever harvestable surpluses are anticipated.

During the last 10 years, KMA Chinook salmon escapements have generally reflected a trend of decreasing abundance and some have fallen to record low levels. Consequently, many Chinook salmon sport fisheries have been restricted in attempts to conserve spawning Chinook salmon populations. Chinook salmon harvests have fluctuated in many areas, with little harvest occurring in many drainages in the last 10 years.

## **KARLUK RIVER**

### **Fishery Description**

The Karluk River, located on the southwest end of Kodiak Island approximately 60 miles from the City of Kodiak, is the second-largest drainage within the KRA. The river spans approximately 22 miles and is generally accessible to anglers only by aircraft. The Karluk River drainage supports 1 of 2 indigenous Chinook salmon populations in KRA waters, and it has historically supported the most popular Chinook salmon sport fishery within the entire KMA.

Chinook salmon typically return to the Karluk River drainage from late May through early July with peak immigration in mid to late June (Appendix D1). Spawning occurs throughout the mainstem but in most years appears to be concentrated within several miles of the Karluk Lake outlet and below a reach known as “The Portage.” Peak spawning typically occurs during mid-August.

Most uplands surrounding the Karluk River are privately owned. An easement agreement between the land owner and state and federal governments, which expired in 2012, contained provisions that capped daily visitor numbers at 70 within this 10-mile reach, and only 40% of these visitors could be unguided. Currently, angler participation elsewhere along the river is directly limited by land status, although fee-based use permits may be acquired for upland access.

The Karluk River Chinook salmon run has seen record low counts during the last 15 years and has also seen a dramatic reduction in fishing effort (Appendix E1). The fishery was at one time the most popular fishery in the KMA and both guided and unguided anglers frequented the river targeting Chinook salmon. Historically low runs to the Karluk River have persisted and restrictions on the fishery have been implemented to varying degrees since 2001. Inconsistent fishing opportunity and generally low runs have caused a dramatic reduction in angler effort and currently few, if any, anglers fish the Karluk River during the Chinook salmon run. Some anglers do target sockeye salmon near the lagoon in other locations, but fishing effort is generally limited and is primarily with guided anglers.

## Historical Catch

Information about the Chinook salmon sport fishery is currently available from several sources. Until 2011, inseason surveys of sport harvest and fishing effort were collected annually from on-site angler interviews. Annual estimates of total effort and catch are currently generated from the SWHS, and since 2005, complete guided angler statistics have been available from the ADF&G Freshwater Logbook Database. (Alaska Department of Fish and Game, Division of Sport Fish. 2006 to present. Accessed September 3, 2016. [URL not publicly available as some information is confidential. Contact Research and Technical Services for data requests.]

Between 2006 and 2015, SWHS estimates indicate 875 fish were harvested, all of which were taken in 2006 and 2007 (Table 5). Harvest of Karluk River Chinook salmon has been prohibited entirely since 2008. Freshwater Logbook Program statistics and on-site interviews conducted between 2006 and 2015 also reflect limited harvests (Table 6) in conjunction with lower overall angler effort (Table 2). Occasional poor agreement during this time between SWHS estimates and harvest figures provided by interviews and logbooks is probably the result of SWHS measurement error attributable to relatively low overall angler participation levels in the fishery.

Table 5.—Weir counts through 2016 and Statewide Harvest Survey estimates of Karluk River Chinook salmon sport harvests, 2006–2015.

| Year      | Weir count | Sport harvest | Harvest above weir | Number released | Escapement |
|-----------|------------|---------------|--------------------|-----------------|------------|
| 2006      | 4,112      | 670           | 439                | 2,180           | 3,673      |
| 2007      | 1,765      | 205           | 68                 | 428             | 1,697      |
| 2008      | 752        | 0             | 0                  | 96              | 752        |
| 2009      | 1,306      | 0             | 0                  | 0               | 1,306      |
| 2010      | 2,917      | 0             | 0                  | 16              | 2,917      |
| 2011      | 3,420      | 0             | 0                  | 674             | 3,420      |
| 2012      | 3,197      | 0             | 0                  | 83              | 3,197      |
| 2013      | 1,824      | 0             | 0                  | 161             | 1,824      |
| 2014      | 1,182      | 0             | 0                  | 47              | 1,182      |
| 2015      | 2,777      | 0             | 0                  | 250             | 2,777      |
| Average   |            |               |                    |                 |            |
| 2006–2015 | 2,325      | 88            | 51                 | 394             | 2,275      |
| 2016      | 3,434      | 0             | 0                  | 0               | 3,434      |

Source: Statewide Harvest Survey (SWHS) estimates (Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish [cited November 2016]. Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>); Fuerst 2015; B. Fuerst, Fishery Biologist, ADF&G, Kodiak, unpublished data.

Table 6.—Comparison of harvest and release information obtained from on-site angler interviews and guided angler logbooks to estimates of total harvest and release from the Statewide Harvest Survey for Karluk River Chinook salmon, 2006–2015.

| Year <sup>a</sup> | On-site interviews |          | Guided logbook |          | SWHS    |          |
|-------------------|--------------------|----------|----------------|----------|---------|----------|
|                   | Harvest            | Released | Harvest        | Released | Harvest | Released |
| 2006              | 761                | 1,782    | 842            | 1,349    | 670     | 3,007    |
| 2007              | 156                | 262      | 194            | 410      | 205     | 733      |
| 2008              | 0                  | 31       | 1              | 114      | 0       | 96       |
| 2009              | 0                  | 22       | 0              | 80       | 0       | 0        |
| 2010              | 0                  | 0        | 0              | 12       | 0       | 0        |
| 2011              | 0                  | 0        | 0              | 238      | 0       | 793      |
| 2012              |                    |          | 0              | 342      | 0       | 83       |
| 2013              |                    |          | 0              | 80       | 0       | 161      |
| 2014              |                    |          | 0              | 11       | 0       | 47       |
| 2015              |                    |          | 0              | 8        | 0       | 250      |

*Source:* Statewide Harvest Survey (SWHS) estimates (Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish [cited November 2016]. Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>); Freshwater Logbook Database (Alaska Department of Fish and Game, Division of Sport Fish. 2006 to present. Accessed September 3, 2016. [URL not publicly available as some information is confidential. Contact Research and Technical Services for data requests.]

<sup>a</sup> The last year for on-site angler interviews at the Karluk River was 2011.

## Escapement

Escapements of Karluk River Chinook salmon are monitored through operation of a salmon counting weir established in 1976 a short distance above the stream terminus. Harvests in the sport fishery occurring upstream of the weir are subtracted from the total count to estimate escapement in a given year.

Annual weir counts of Karluk River Chinook salmon recorded between 2001 and 2008 show a trend of decreasing abundance and culminate with a total count of just 752 fish in 2008 (Alaska Sport Fishing Survey database; Table 5). Continued poor annual counts through 2015 have resulted in falling short of the current Chinook salmon biological escapement goal (BEG<sup>3</sup>) range of 3,000–6,000 on a total of 7 occasions since 2001, regardless of management measures taken to conserve escapements (Figure 4, Appendices D1 and E1). In 2016, the BEG was achieved with a weir count of 3,434.

<sup>3</sup> The biological escapement goal is an estimate of escapement that most closely approximates the maximum sustainable productivity of a population.



## Karluk River Chinook Salmon Escapement

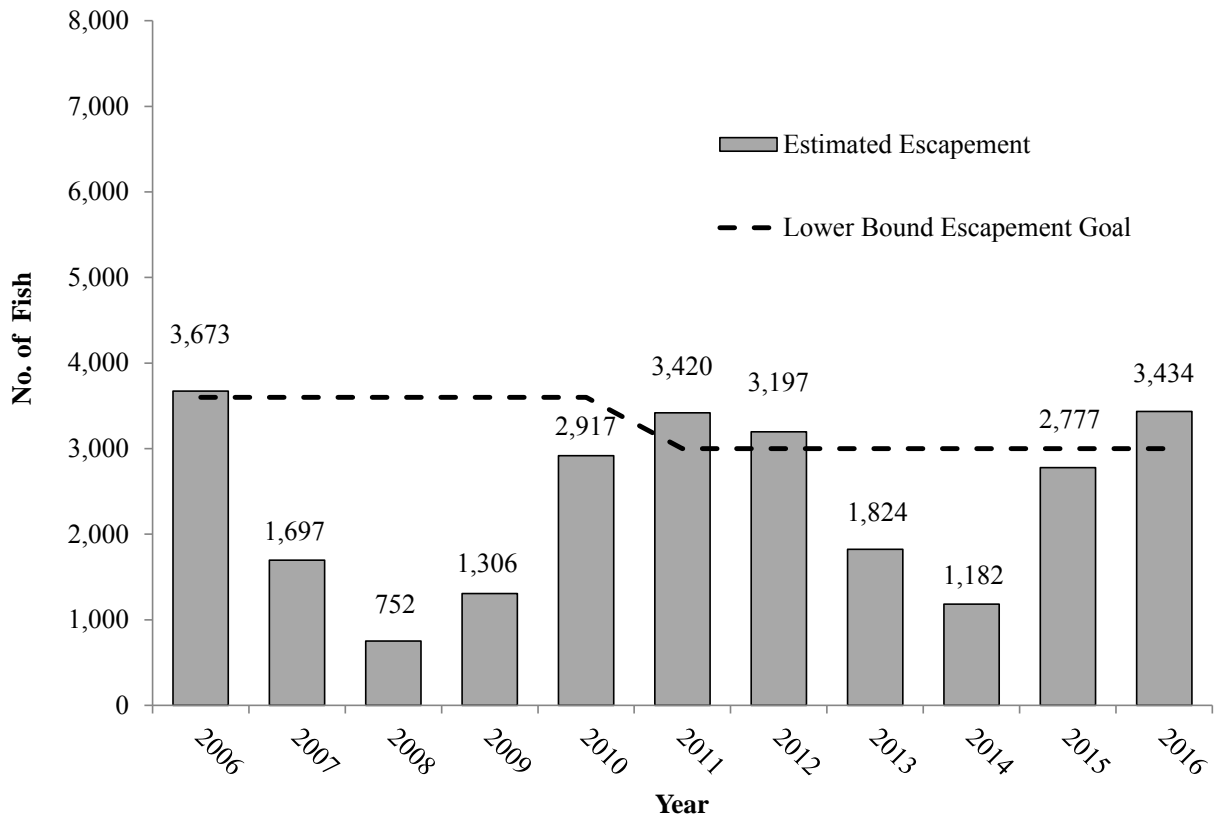


Figure 4.—Estimated escapement of Karluk River Chinook salmon, 2006–2016.

*Source:* Statewide Harvest Survey (SWHS) estimates (Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish [cited November 2016]. Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>); Fuerst 2015; B. Fuerst, Fishery Biologist, ADF&G, Kodiak, unpublished data.

### Fishery Management and Objectives

The Karluk River Chinook salmon fishing season is open by regulation from 1 January through 25 July with fishing permitted within the entire drainage throughout the season. A complete closure of the drainage to Chinook salmon fishing after 25 July is intended to afford protection for spawning fish from anglers. A bag limit for Karluk River Chinook salmon over 20 inches in length is set at 2 per day with an annual limit of 5.

Management of the Karluk River run is aimed at maximizing angler opportunity while ensuring attainment of the BEG. The current BEG of 3,000–6,000 fish is classified as a “biological escapement goal” which, according to existing regulatory policy, constitutes an estimate of escapement that over time most closely approximates the maximum sustainable productivity of the population. The BEG is based both on historical escapements and estimated age composition of the runs and is expressed as a range of values to account for uncertainty in the precision of the estimate.

In an attempt to meet the BEG, emergency orders (EOs) have been issued for the sport fishery annually since 2005, with complete restrictions on harvest occurring annually since 2008

(Appendix F1). Additionally, in 2011, the BOF designated Karluk River Chinook salmon a “stock of concern” and adopted restrictions pertaining to the commercial fishery aimed at protecting Chinook salmon bound for the Karluk River (Appendix F3). This “action plan” directed ADF&G to issue EOs prohibiting retention of Chinook salmon larger than 28 inches in length in commercial seine fisheries in the Inner and Outer Karluk and Ayakulik sections through 30 July if the Karluk Chinook salmon run is not projected to meet the escapement goal and the sport fishery is either closed or restricted to nonretention. In 2014, the BOF took further action and prohibited the retention of Chinook salmon greater than 28 inches for the whole of the Kodiak Area by regulation. In addition to action by the BOF, the Department of Commercial Fisheries (CF) has issued EOs regarding retention of Chinook salmon greater than 28 inches to attempt to meet the Karluk Chinook BEG since 2005.

### **2015 and 2016 Sport Fisheries**

Consistently poor escapements warranted preseason restrictions in both 2015 and 2016 that closed the sport fishery for the entire drainage (Appendix C1). Consequently, both SWHS estimates and logbook harvests showed zero Chinook salmon harvested during the 2015 season, and it is likely that estimates will be zero for 2016 when available (Table 6). Angler effort in years just prior, as measured by logbook reports and on-site interviews, showed a substantial decrease in interest in the fishery when compared to historical effort levels, and was probably a direct consequence of reduced fishing opportunity.

Even with the preseason restrictions and subsequent closure of the sport fishery, historically low Chinook salmon escapement continued during the 2015 run, when just 2,777 fish were counted through the weir (Table 5). The 2016 weir count of 3,434 was above the lower end of the BEG; however, the BEG was achieved too late in the season to warrant opening the fishery.

## **AYAKULIK RIVER**

### **Fishery Description**

The Ayakulik River drainage is approximately 20 miles south of the Karluk River and is the largest watershed within the KRA. The mainstem, where nearly all sport fishing occurs, extends approximately 13 miles and is accessible via aircraft. The Ayakulik River sustains the second-largest native KRA Chinook salmon population and also the second most popular KMA Chinook salmon sport fishery.

Similar to the Karluk River, Chinook salmon typically return to the Ayakulik River between late May and early July with the peak immigration during mid to late June (Appendix D2). Spawning occurs not only in the mainstem but also in a main tributary stream known as the “East Fork.” It is generally believed this spawning habitat is mostly utilized by the early portion of the run, with later-arriving fish preferring to spawn in the lower river. As with the Karluk River run, peak spawning typically occurs during mid-August.

With the exception of a privately owned 1-square-mile section encompassing the river mouth and lagoon, all uplands surrounding the Ayakulik River are within the Kodiak National Wildlife Refuge (KNWR). Unrestricted access to the sport fishery from KNWR lands is available to all unguided anglers, whereas guide operators and their clients are limited in number under the KNWR management policy. Currently, a total of 6 operators guiding as many as 35 anglers are permitted access to the sport fishery from KNWR lands during a single day.

The Ayakulik Chinook salmon run has seen record high and record low counts during the last 15 years and has also seen a dramatic reduction in fishing effort (Appendices E2 and F2). The Ayakulik Chinook salmon fishery was at one time the second most popular fishery in the KMA, next to the Karluk River Chinook salmon fishery, and both guided and unguided anglers frequented the river targeting Chinook salmon until about 2005. Since then, historically low runs to the Ayakulik River have persisted and frequent restrictions in the fishery have resulted in reduced angler interest during the Chinook salmon run. This was also coupled with more limited access due to the lagoon filling in to the point where floatplanes could no longer land to allow anglers to be picked up near the mouth of the river. With low runs, reduced fishing opportunity, and difficult access, angler effort is currently limited to primarily guided anglers who target Chinook salmon when it is allowed during the Chinook salmon run but who are primarily fishing for sockeye salmon in various locations throughout the river. There are occasionally unguided anglers on the river but there is a general lack of interest in the fishery for unguided trips.

### **Historical Catch**

Current angler catch and effort information for Ayakulik River Chinook salmon is only intermittently obtainable from the SWHS and on-site angler interviews. However, guided angler statistics dating to 2005 are available annually from the Freshwater Logbook Database.

Between 2006 and 2015, the SWHS estimated that angler harvests of Chinook salmon averaged 67 fish, although harvest estimates were not available in 2014 and 2015 due to low response rates (Table 7). Declining harvests since 2006 are probably attributable to a concurrent decrease in the abundance of fish, which resulted in the implementation of inseason management measures in most years to conserve escapements (Appendices C1 and F2). On-site angler interviews conducted between 2006 and 2010 and Freshwater Logbook Database statistics through 2015 show decreased harvests and effort (Table 8). Similar to the Karluk River fishery, disparities between SWHS estimates and statistics from interviews and logbooks are probably due to measurement error resulting from relatively low levels of angler effort.

### **Escapement**

Ayakulik River Chinook salmon escapements are monitored through operation of a salmon counting weir established in 1970 a short distance above the lagoon. Harvests in the sport fishery occurring upstream of the weir are subtracted from the total count to estimate escapement in a given year.

Since 2006, the abundances of Ayakulik River Chinook salmon as measured by weir counts include some of the lowest counts on record; the record lowest count of 917 fish occurred in 2014 (Table 7). In 2015, counts improved slightly (2,392 fish); however, the BEG of 4,000 to 7,000 fish was not met. In 2016, the BEG was met with a weir count of 4,594, although it was achieved late in the season. Despite management measures taken to conserve escapements, there has been a failure to achieve the current Chinook salmon BEG on a total of 6 occasions in the last 10-year period (Figure 5; Appendices D2, E2, and F2).

Table 7.—Weir counts through 2016 and Statewide Harvest Survey estimates of Ayakulik River Chinook salmon sport harvests, 2006–2015.

| Year                 | Weir count | Sport harvests <sup>a</sup> | Number released | Escapement |
|----------------------|------------|-----------------------------|-----------------|------------|
| 2006                 | 3,106      | 169                         | 2,914           | 2,937      |
| 2007                 | 6,535      | 303                         | 3,779           | 6,232      |
| 2008                 | 3,071      | 0                           | 830             | 3,071      |
| 2009                 | 2,615      | 0                           | 354             | 2,615      |
| 2010                 | 5,301      | 104                         | 625             | 5,197      |
| 2011                 | 4,316      | 64                          | —               | 4,252      |
| 2012                 | 4,760      | 16                          | —               | 4,744      |
| 2013                 | 2,369      | 15                          | —               | 2,354      |
| 2014                 | 917        | 0                           | 96              | 917        |
| 2015                 | 2,392      | 0                           | —               | 2,392      |
| Average<br>2006–2015 | 3,538      | 67                          | 1,433           | 3,471      |
| 2016                 | 4,594      |                             |                 |            |

<sup>a</sup> Sport harvests from 2011-15 from Guided Logbook program and include only fish harvested above the weir.

*Source:* Statewide Harvest Survey (SWHS) estimates (Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish [cited November 2016]. Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>); Freshwater Logbook Database (Alaska Department of Fish and Game, Division of Sport Fish. 2006 to present. Accessed September 3, 2016. [URL not publicly available as some information is confidential. Contact Research and Technical Services for data requests.]); Fuerst 2015; B. Fuerst, Fishery Biologist, ADF&G, Kodiak, unpublished data.

*Note:* An en dash means insufficient survey responses to generate an estimate.

Table 8.—Comparison of harvest and release information obtained from on-site angler interviews and guided angler logbooks to estimates of total harvest and release information from the Statewide Harvest Survey for Ayakulik River Chinook salmon, 2006–2015.

| Year <sup>a</sup> | Creel   |          | Guided logbook |          | SWHS    |          |
|-------------------|---------|----------|----------------|----------|---------|----------|
|                   | Harvest | Released | Harvest        | Released | Harvest | Released |
| 2006              | 50      | 544      | 54             | 897      | 169     | 2,914    |
| 2007              | 59      | 1,009    | 116            | 1,737    | 303     | 3,779    |
| 2008              | 12      | 300      | 2              | 329      | 0       | 830      |
| 2009              | 0       | 43       | 0              | 83       | 0       | 354      |
| 2010              | 2       | 41       | 2              | 185      | 104     | 625      |
| 2011              |         |          | 65             | 454      | —       | —        |
| 2012              |         |          | 23             | 554      | —       | —        |
| 2013              |         |          | 18             | 299      | —       | —        |
| 2014              |         |          | 0              | 59       | 0       | 96       |
| 2015              |         |          | 0              | 82       | —       | —        |

*Source:* Statewide Harvest Survey (SWHS) estimates (Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish [cited November 2016]. Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>); Freshwater Logbook Database (Alaska Department of Fish and Game, Division of Sport Fish. 2006 to present. Accessed September 3, 2016. [URL not publicly available as some information is confidential. Contact Research and Technical Services for data requests.]).

*Note:* An en dash means insufficient survey responses to generate an estimate.

<sup>a</sup> The last year for on-site angler interviews at the Ayakulik River was 2010.

## Ayakulik River Chinook Salmon Escapement

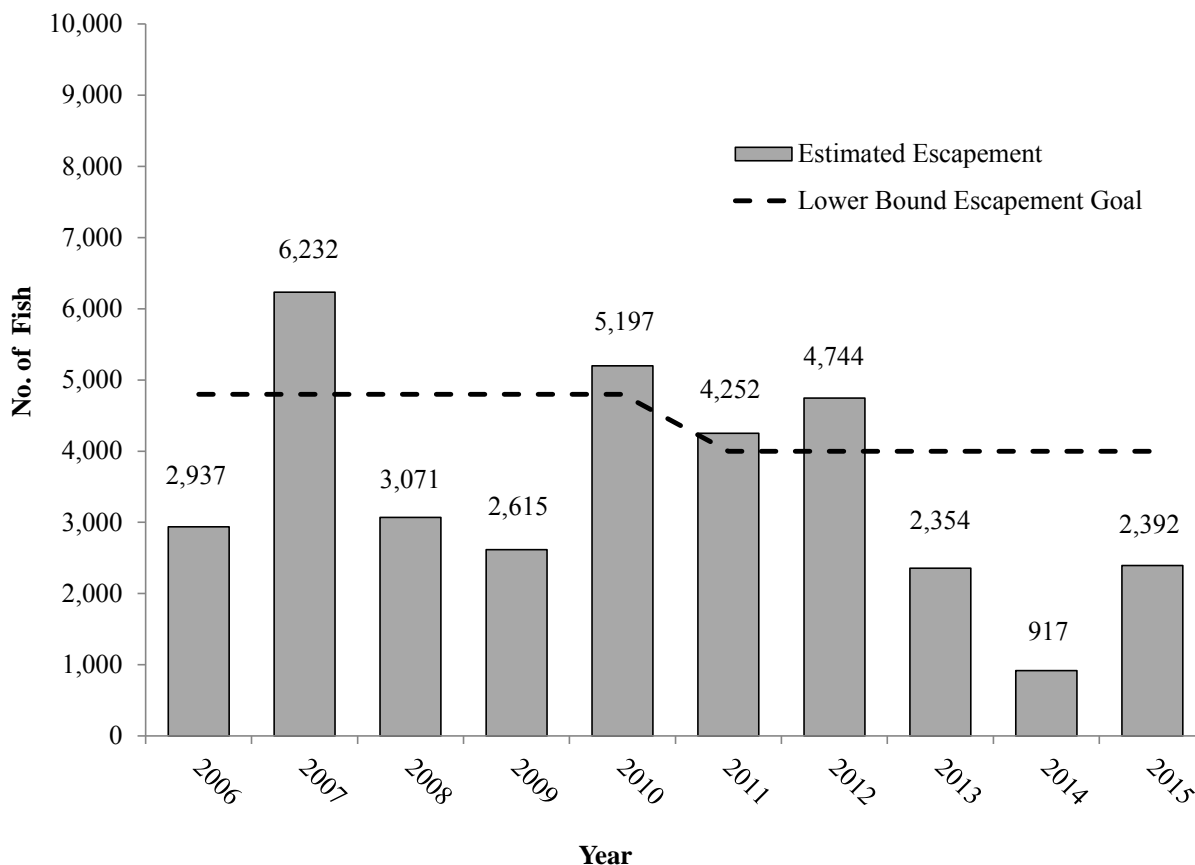


Figure 5.—Estimated escapement of Ayakulik River Chinook salmon, 2006–2015.

*Source:* Statewide Harvest Survey (SWHS) estimates (Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish [cited November 2016]. Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>); Fuerst 2015; B. Fuerst, Fishery Biologist, ADF&G, Kodiak, unpublished data.

### Fishery Management and Objectives

The Ayakulik River Chinook salmon fishing season is open by regulation from 1 January through 25 July with fishing permitted within the entire drainage throughout the season. A complete closure of the drainage to Chinook salmon fishing after 25 July is intended to afford protection for spawning fish from anglers. The bag limit for Ayakulik River Chinook salmon over 20 inches in length is 2 per day with an annual limit of 5.

The management strategy for the Ayakulik River sport fishery seeks to balance angler opportunity with consistent achievement of the EG. The current escapement objective of 4,000–7,000 fish is considered a BEG and is calculated to approximate the maximum sustainable productivity of the population over time. The Ayakulik River Chinook salmon BEG is based on both historical escapements and estimated age composition of the runs and is expressed as a range of values to account for uncertainty in precision of the estimate.

Similar to the Karluk River, in an attempt to meet the BEG, emergency orders have been issued to restrict the sport fishery every year since 2005, except when the 2-fish bag limit was restored on one occasion (Appendix F2).

## **2015 and 2016 Sport Fisheries**

The 2015 Chinook salmon escapement of 2,392 fish was one of the lowest on record for the Ayakulik River run and fell well short of the lower end of the 4,000–7,000 BEG range (Figure 5). Expected low runs of Chinook salmon in 2015 resulted in pre-season restriction in the sport fishery to catch-and-release only (Appendix C1). As a result, the estimated and reported Chinook salmon harvest was zero fish (Tables 7 and 8). The 2016 fishery was closed pre-season due to consistently poor escapements in recent years; however, the fishery was reopened with retention of Chinook salmon prohibited and the use of bait restricted when weir counts achieved the lower bound of the BEG. Formerly high levels of angler effort, indicated by onsite interviews and SWHS estimates, have diminished significantly in the last 10 years (Table 2).

## **CHIGNIK RIVER**

### **Fishery Description**

The Chignik River drainage is located within the AP–AIRA on the south side of the Alaska Peninsula, approximately 460 miles southwest of the City of Anchorage and adjacent to the village communities of Chignik Lagoon and Chignik Lake. The mainstem, where the Chinook salmon sport fishery occurs, extends approximately 2.5 miles and is mainly accessible by boat from the villages. Because of its accessibility and proximity to one of the area’s larger communities, the Chignik River historically has supported the largest AP–AIRA Chinook salmon sport fishery.

Chinook salmon normally return to the Chignik River between late June and mid-August, with peak immigration during mid to late July (Appendix D3). Spawning reportedly occurs mostly in the mainstem but may also occur in several tributary streams to Chignik Lake. Peak spawning typically occurs during late August and early September.

With the exception of some municipal, state-owned, and individually-owned private lands, most uplands surrounding the Chignik River drainage are under ownership of Alaska Native corporation interests. The entire watershed is bounded within the Alaska Peninsula National Wildlife Refuge (APNWR). Angler access to the sport fishery is generally unrestricted because watercraft are principally used for transportation to and from the river. Permitted access to the fishery may also be available across Alaska Native–owned uplands.

### **Historical Catch**

Due to a relatively low level of angler effort, published catch and harvest estimates for Chignik River Chinook salmon are rarely available from the SWHS. However, since 2005, guided angler statistics have been obtainable from the Freshwater Logbook Database.

Between 2006 and 2015, the average estimated inriver harvest of Chinook salmon was 176 (Table 9). During the same period, anglers released about 2 fish for each 1 harvested. Annual Chignik River Chinook salmon harvests reported in logbooks since 2006 have ranged between 61 and 255 fish (Table 10).

## Escapement

Chignik River Chinook salmon escapements are monitored through operation of a salmon counting weir established in 1922 and operated by ADF&G since 1959, just upstream of the intertidal zone. Total daily weir counts are extrapolated from timed visual counts (using underwater video) for the first 10 minutes of each hour the weir is in operation. Harvests in the sport fishery above the weir are subtracted from the total count to estimate escapement in a given year.

Since 2006, Chignik River Chinook salmon weir counts ranged from 3,679 in 2010 to a low of 1,253 in 2013 (Table 9). Even so, final estimates of annual escapement have met or exceeded the current Chinook salmon BEG range of 1,300–2,700 fish in every year except 2013 since 2006 (Figure 6).

Table 9.—Weir counts through 2016 and Statewide Harvest Survey estimates of Chignik River Chinook salmon sport harvest and catch, 2006–2015.

| Year <sup>a</sup> | Weir count | Sport harvest <sup>b</sup> | Released | Escapement |
|-------------------|------------|----------------------------|----------|------------|
| 2006              | 3,535      | 295                        | 857      | 3,240      |
| 2007              | 2,000      | 240                        | 586      | 1,760      |
| 2008              | 1,730      | 115                        | 250      | 1,615      |
| 2009              | 1,680      | 153                        | 401      | 1,527      |
| 2010              | 3,679      | 250                        | 586      | 3,429      |
| 2011              | 2,728      | 305                        | 461      | 2,423      |
| 2012              | 1,449      | 111                        | 216      | 1,338      |
| 2013              | 1,253      | 133                        | 165      | 1,120      |
| 2014              | 2,895      | 59                         | 168      | 2,836      |
| 2015 <sup>b</sup> | 2,054      | 96                         | 144      | 1,958      |
| Average           |            |                            |          |            |
| 2006–2015         | 2,300      | 176                        | 383      | 2,125      |
| 2016              | 1,843      |                            |          |            |

*Source:* Statewide Harvest Survey (SWHS) estimates from the Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2016). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>; Freshwater Logbook Database (Alaska Department of Fish and Game, Division of Sport Fish. 2006 to present. Accessed September 3, 2016. [URL not publicly available as some information is confidential. Contact Research and Technical Services for data requests.]); Fuerst 2015.

<sup>a</sup> Harvest and numbers released for 2006–2014 were estimated from ADF&G Freshwater Sport Fish Guide Logbook Database and inseason observations of catch and effort for all anglers fishing above the weir.

<sup>b</sup> The harvest and release estimates for 2015 are from the ADF&G Freshwater Logbook Database only; included harvests are above the weir only.

Table 10.—Guided angler harvest and release, Chignik River 2006–2015.

| Year | Salmon  |          |         |          |         |          |              |          |         |          |
|------|---------|----------|---------|----------|---------|----------|--------------|----------|---------|----------|
|      | Chinook |          | Coho    |          | Sockeye |          | Dolly Varden |          | Rainbow |          |
|      | Harvest | Released | Harvest | Released | Harvest | Released | Harvest      | Released | Harvest | Released |
| 2006 | 245     | 562      | 0       | 42       | 0       | 0        | 0            | 10       | 0       | 0        |
| 2007 | 190     | 346      | 25      | 12       | 15      | 22       | 0            | 370      | 0       | 7        |
| 2008 | 65      | 135      | 71      | 69       | 10      | 20       | 0            | 370      | 0       | 0        |
| 2009 | 103     | 248      | 32      | 68       | 23      | 27       | 5            | 69       | 0       | 0        |
| 2010 | 200     | 336      | 6       | 0        | 7       | 0        | 4            | 0        | 0       | 0        |
| 2011 | 255     | 156      | 0       | 0        | 16      | 31       | 34           | 0        | 0       | 0        |
| 2012 | 61      | 105      | 44      | 0        | 6       | 6        | 0            | 558      | 0       | 0        |
| 2013 | 83      | 32       | 75      | 20       | 14      | 2        | 4            | 57       | 0       | 0        |
| 2014 | 88      | 253      | 75      | 162      | 2       | 0        | 1            | 7        | 0       | 0        |
| 2015 | 112     | 208      | 1       | 0        | 3       | 0        | 0            | 0        | 0       | 0        |

Source: Freshwater Logbook Database. (Alaska Department of Fish and Game, Division of Sport Fish. 2006 to present. Accessed September 3, 2016. [URL not publicly available as some information is confidential. Contact Research and Technical Services for data requests])



## Chignik River Chinook Salmon Escapement

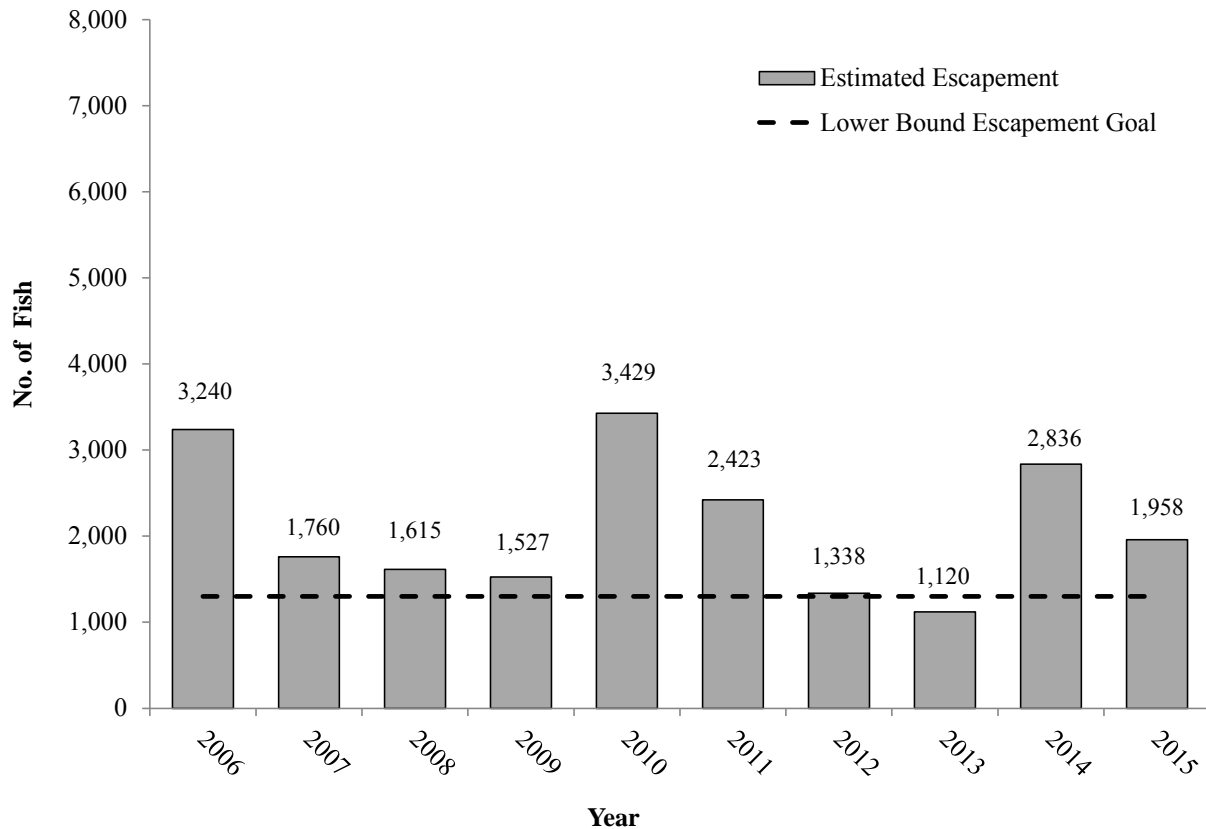


Figure 6.—Estimated escapement of Chignik River Chinook salmon, 2006–2015.

*Source:* Statewide Harvest Survey (SWHS) estimates (Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish [cited November 2016]. Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>); Fuerst 2015. Freshwater Logbook Database. (Alaska Department of Fish and Game, Division of Sport Fish. 2006 to present. Accessed September 3, 2016. [URL not publicly available as some information is confidential. Contact Research and Technical Services for data requests]).

*Note:* Sport harvest above the weir based on the ADF&G Freshwater Logbook Database as well as angler reports from 2011–2014.

### Fishery Management and Objectives

The Chignik River Chinook salmon fishing season is open by regulation from 1 January through 9 August with fishing permitted within the entire drainage throughout the season. A complete closure of the drainage to Chinook salmon fishing after 9 August is intended to afford protection for spawning fish from anglers. A bag limit for Chignik River Chinook salmon over 20 inches in length is set at 2 per day. An annual limit of 5 fish over 20 inches is also in effect.

The primary objective for management of the Chignik River sport fishery is achievement of the BEG in combination with maximized opportunity for anglers. The Chignik River Chinook salmon BEG is derived not only from historical escapements and the estimated age composition of the runs but also a habitat-based model using watershed volume as a measure of population carrying capacity.

## **2015 and 2016 Sport Fisheries**

Using weir counts as an indicator of overall abundance, both the 2015 and 2016 runs of Chignik River Chinook salmon were slightly lower than the recent 10-year average (Table 9). No restriction of the Chignik River Chinook salmon fishery occurred in 2015 or 2016 (Appendix C1). Daily weir counts throughout both runs indicated that the projected escapements would achieve the BEG, but weir counts did not indicate the BEG would be exceeded or warrant liberalization of the fishery. Log-sheets received for guided anglers reported 112 Chinook salmon harvested from the 2015 run (Table 10); guided anglers released nearly 2 Chinook salmon for every 1 harvested. Published SWHS estimates of catch and harvest are available only occasionally due to an inadequate number of responses to the survey. This indicates overall effort on the Chignik River sport fishery is probably low, and has remained relatively stable over time.

The 2015 escapement exceeded the lower end of the BEG of 1,300 fish, and the 2016 weir count of 1,843 fish also exceeded the lower end of the BEG, although both counts are still below the 10-year average escapement of 2,125 fish.

## **MARINE WATERS**

### **Fishery Description**

Over the past 20 years, a marine waters Chinook salmon sport fishery has developed within the KRA, mostly in waters adjacent to the City of Kodiak but more recently from a number of remote lodges and near the community of Old Harbor as well. Waters surrounding the Kodiak Archipelago and Alaska Peninsula provide ocean rearing for Chinook salmon populations across the North Pacific. Previous recoveries of tagged fish harvested around Kodiak Island identified wild and enhanced stocks of origin not only in Alaska but also Canada and the Pacific Northwest (Schwarz et al. 2002). More recently, ADF&G has conducted a study collecting genetics samples from Chinook salmon harvested in marine waters from both the sport and commercial fisheries to attempt to apportion the harvest by stock of origin. Results of this study will be published in late 2016. Most of the marine waters harvest by KRA anglers is taken from the waters of Northeastern Kodiak Island in the vicinity of Chiniak, Marmot, and Ugak bays.

Development of the KRA fishery has coincided with growth of a Kodiak charter vessel fleet, which is primarily based in the City of Kodiak. In recent years, harvests of Chinook salmon by charter vessel clients have averaged 37% of the annual harvest (Figure 7).

The KRA marine waters Chinook salmon fishery occurs under provisions of a regulatory management plan established in 2005 and amended in 2008, which prescribes an annual guideline harvest level (GHL) of 11,000 fish (Appendix B1). Additional provisions stipulate periodic review of the plan by the BOF when a recent harvest trend exceeds this allocation. Achievement of the GHL is measured by the SWHS. Angler effort for marine waters Chinook salmon in the AP–AIRA is not governed by a regulatory management plan. The daily bag and possession limits for Chinook salmon in all marine waters of the KMA are currently set at 2. There is no annual limit established for this fishery.

## Marine Harvest of Chinook Salmon

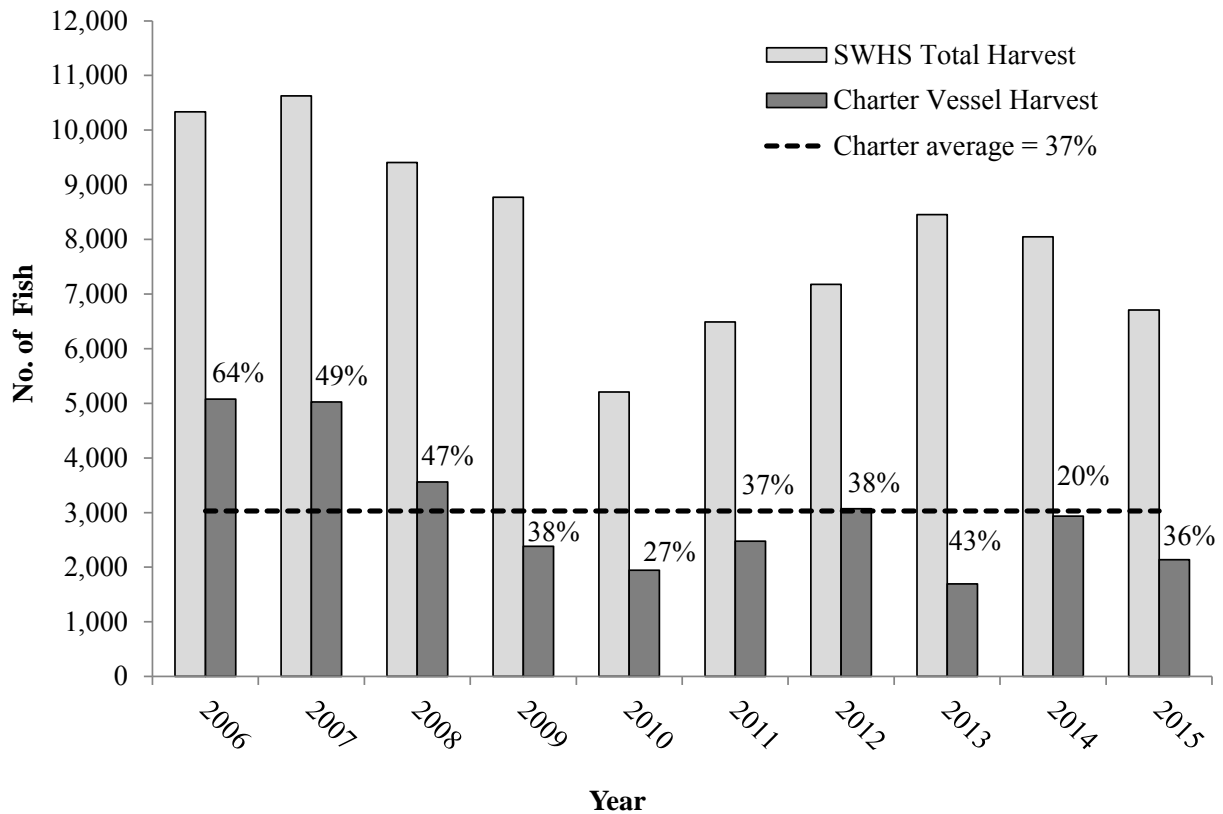


Figure 7.—Comparison of Statewide Harvest Survey estimates of harvest to charter vessel harvest reported in logbooks of Chinook salmon harvested in all KRA marine waters, 2006–2015.

*Source:* Statewide Harvest Survey (SWHS) estimates (Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish [cited November 2016]. Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>); Saltwater Logbook Database. (Alaska Department of Fish and Game, Division of Sport Fish. 2006 to present. Accessed September 3, 2016. [URL not publicly available as some information is confidential. Contact Research and Technical Services for data requests]).

### Historical Catch

Overall angler catch and effort information for marine waters Chinook salmon is currently provided by the SWHS. Guided angler statistics for charter vessel trips are also available from ADF&G’s Saltwater Logbook Database. (Alaska Department of Fish and Game, Division of Sport Fish. 2006 to present. Accessed September 3, 2016. [URL not publicly available as some information is confidential. Contact Research and Technical Services for data requests])

Between 2006 and 2015, the SWHS estimated that angler harvests of KRA Chinook salmon ranged between 5,208 and 10,626, averaging 8,212 (Table 11). Harvests from AP–AIRA waters were a nominal percentage, averaging just 89 Chinook salmon and never totaling more than 300 in a single year. For the KRA, saltwater logbook statistics showed a clear trend of growth in the charter vessel fishery in earlier years, which led to the establishment of the current regulatory management plan in 2005, but from 2006–2015, the guided sector’s harvest dropped as much as 75% from 5,011 in 2006 to 1,687 in 2013 (Table 12).

Table 11.–Statewide Harvest Survey estimates of Kodiak Management Area marine water Chinook salmon harvest and catch, 2006–2015.

| Year      | Harvest                          |                        |                              | Catch                            |                        |                              |
|-----------|----------------------------------|------------------------|------------------------------|----------------------------------|------------------------|------------------------------|
|           | Alaska Peninsula Regulatory Area | Kodiak Regulatory Area | Kodiak Management Area total | Alaska Peninsula Regulatory Area | Kodiak Regulatory Area | Kodiak Management Area total |
| 2006      | 27                               | 10,333                 | 10,360                       | 27                               | 13,217                 | 13,244                       |
| 2007      | 218                              | 10,626                 | 10,844                       | 283                              | 14,334                 | 14,617                       |
| 2008      | 63                               | 9,408                  | 9,471                        | 140                              | 11,499                 | 11,639                       |
| 2009      | 10                               | 8,773                  | 8,783                        | 92                               | 11,694                 | 11,786                       |
| 2010      | 288                              | 5,208                  | 5,496                        | 338                              | 6,839                  | 7,177                        |
| 2011      | 17                               | 6,491                  | 6,508                        | 17                               | 8,122                  | 8,139                        |
| 2012      | 0                                | 7,176                  | 7,176                        | 0                                | 10,464                 | 10,464                       |
| 2013      | 30                               | 8,452                  | 8,482                        | 45                               | 11,844                 | 11,889                       |
| 2014      | 67                               | 8,049                  | 8,116                        | 67                               | 11,648                 | 11,715                       |
| 2015      | 172                              | 6,709                  | 6,881                        | 771                              | 9,492                  | 10,263                       |
| Average   |                                  |                        |                              |                                  |                        |                              |
| 2006–2015 | 89                               | 8,123                  | 8,212                        | 178                              | 10,915                 | 11,093                       |

Source: Statewide Harvest Survey (SWHS) estimates (Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish [cited November 2016]. Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>).

## Fishery Management and Objectives

A primary management objective for the KRA marine waters Chinook salmon sport fishery is to contain harvests within the current GHF level established by the BOF. Due a lack of adequate inseason catch and effort information available to managers, achievement of this objective is assessed on the basis of trends detectable in SWHS results viewed over time. To date, it has not been possible to separate Chinook salmon harvests by stock of origin; however, with results of a genetic analysis study forthcoming, harvests will be able to be identified by at least geographical region. In addition to establishment of the GHF for KRA waters, a relatively conservative daily bag limit established by the BOF for the entire management area is intended to control growth of harvests.

### 2015 Sport Fishery

The 2015 Chinook salmon KMA harvest of 6,881 was below the most recent 10-year average (8,212 fish; Table 11). The guided angler Chinook salmon harvest reported in logbooks equaled 2,143 fish (Table 12) and was 36 % of the SWHS estimate for all anglers.

Without expansion of effort by unguided anglers, it's uncertain whether future KRA harvest levels will increase. Furthermore, recently implemented federal halibut regulations for charter boat operators limit prospects for additional growth of the charter boat industry within the KRA. In contrast, charter boat operators fishing AP–AIRA waters remain unaffected by these regulations but relatively stable historical Chinook salmon harvest levels indicate that a large increase in catch from this regulatory area is unlikely.

Table 12.—Guided angler harvest and release of Kodiak Management Area marine waters Chinook salmon, 2006–2015.

| Location               | Year | Total effort |               | Chinook salmon |          |
|------------------------|------|--------------|---------------|----------------|----------|
|                        |      | Vessels      | Total clients | Harvest        | Released |
| Chinkiak Bay           |      |              |               |                |          |
|                        | 2006 | 61           | 6,589         | 2,737          | 21       |
|                        | 2007 | 59           | 5,909         | 3,812          | 21       |
|                        | 2008 | 69           | 5,468         | 2,705          | 13       |
|                        | 2009 | 54           | 3,573         | 1,331          | 264      |
|                        | 2010 | 51           | 4,303         | 601            | 16       |
|                        | 2011 | 47           | 3,488         | 1,334          | 23       |
|                        | 2012 | 47           | 3,470         | 1,070          | 21       |
|                        | 2013 | 21           | 1,821         | 384            | 26       |
|                        | 2014 | 20           | 2,963         | 377            | 19       |
|                        | 2015 | 26           | 2,039         | 328            | 3        |
| Afognak–Shuyak Islands |      |              |               |                |          |
|                        | 2006 | 45           | 2,629         | 134            | 2        |
|                        | 2007 | 51           | 3,741         | 232            | 4        |
|                        | 2008 | 47           | 2,903         | 161            | 10       |
|                        | 2009 | 49           | 2,824         | 229            | 70       |
|                        | 2010 | 50           | 3,118         | 363            | 164      |
|                        | 2011 | 49           | 2,126         | 201            | 27       |
|                        | 2012 | 36           | 1,926         | 521            | 12       |
|                        | 2013 | 41           | 3,515         | 513            | 212      |
|                        | 2014 | 45           | 2,968         | 357            | 140      |
|                        | 2015 | 29           | 2,730         | 388            | 22       |
| Kodiak Regulatory Area |      |              |               |                |          |
|                        | 2006 | 156          | 14,312        | 5,011          | 68       |
|                        | 2007 | 158          | 15,504        | 4,984          | 40       |
|                        | 2008 | 144          | 13,625        | 3,527          | 33       |
|                        | 2009 | 131          | 11,250        | 2,124          | 259      |
|                        | 2010 | 123          | 12,039        | 1,524          | 581      |
|                        | 2011 | 125          | 15,134        | 2,230          | 131      |
|                        | 2012 | 121          | 14,268        | 3,036          | 193      |
|                        | 2013 | 104          | 12,319        | 1,687          | 295      |
|                        | 2014 | 103          | 12,805        | 2,925          | 337      |
|                        | 2015 | 100          | 12,249        | 2,138          | 48       |

-continued-

Table 12.–Page 2 of 2.

| Location                                   | Year | Total effort |               | Chinook salmon |          |
|--|------|--------------|---------------|----------------|----------|
|  |      | Vessels      | Total clients | Harvest        | Released |
| Alaska Peninsula–Aleutians Regulatory Area |      |              |               |                |          |
|  | 2006 | 12           | 546           | 146            | 2        |
|  | 2007 | 16           | 673           | 225            | 9        |
|  | 2008 | 18           | 581           | 176            | 0        |
|  | 2009 | 28           | 719           | 23             | 5        |
|  | 2010 | 32           | 995           | 38             | 5        |
|  | 2011 | 25           | 314           | 20             | 0        |
|  | 2012 | 8            | 335           | 1              | 0        |
|  | 2013 | 7            | 325           | 10             | 0        |
|  | 2014 | 5            | 130           | 12             | 0        |
|  | 2015 | 8            | 221           | 5              | 0        |
| Total Kodiak Management Area               |      |              |               |                |          |
|  | 2006 | 168          | 17,272        | 5,053          | 71       |
|  | 2007 | 174          | 17,953        | 5,003          | 42       |
|  | 2008 | 162          | 15,471        | 3,730          | 36       |
|  | 2009 | 159          | 13,047        | 2,365          | 280      |
|  | 2010 | 155          | 14,149        | 1,969          | 312      |
|  | 2011 | 150          | 15,448        | 2,488          | 159      |
|  | 2012 | 129          | 14,603        | 3,037          | 193      |
|  | 2013 | 111          | 12,644        | 1,697          | 285      |
|  | 2014 | 108          | 12,935        | 2,937          | 337      |
|  | 2015 | 106          | 12,470        | 2,143          | 48       |

*Source:* Saltwater Logbook Database. (Alaska Department of Fish and Game, Division of Sport Fish. 2006 to present. Accessed September 3, 2016. [URL not publicly available as some information is confidential. Contact Research and Technical Services for data requests]).

## ENHANCED CHINOOK SALMON

To increase road-accessible harvest opportunities and ensure sustainability of the area’s wild Chinook salmon populations, SF began a cooperative program in 2000 with KRAA to stock Chinook salmon at Monashka Creek (Figure 3) through a formal cooperative agreement. All stocking is conducted in accordance with current guidelines set forth in the SF Statewide Stocking Plan for Recreational Fisheries<sup>4</sup> (SSP), which is a 5-year stocking document updated annually to reflect stocking needs based on funding, changes in land status, or other considerations.

Road system Chinook salmon stocking has occurred since the 1970s and Chignik River Chinook salmon were used as a brood source in the 1970s and 1980s. For the current project, Karluk River Chinook salmon were originally used as a brood source with the purpose of eventually

<sup>4</sup> Available at <http://www.adfg.alaska.gov/static/fishing/pdfs/hatcheries/15region2.pdf> (Accessed December 2015).

collecting eggs to sustain the project directly from enhanced returns. Since 2005, Chinook salmon egg takes have solely utilized the enhanced Monashka Creek run. Further development of the enhancement project was accomplished in 2007, when Chinook salmon releases were expanded to include the American and Olds rivers, and again in 2014, when the Salonie Creek was designated as an additional release location. Currently, about three-fourths of juvenile Chinook salmon produced annually at KRAA's Pillar Creek Hatchery facility are released into these drainages, and the remainder are used to sustain the Monashka Creek brood source.

All Chinook salmon stocked for the Road Zone project are released as smolt. Current provisions of the SF-KRAA cooperative agreement and SSP goals identify a target release size of 15 g, although actual average smolt size through 2015 has ranged from 11 to 30 g. Smolt are stocked annually during May and June, after 1 year of hatchery rearing. All fish are imprinted in holding pens in their destination drainage for at least 2 weeks prior to release. Adults return in small percentages as ocean-age-1 and -2 males, and both males and females return in larger numbers at ages 3 and 4. Any returning adult Chinook salmon not harvested by the sport fishery or other users either remains reproductively viable before naturally expiring or is collected as alternative broodstock for supplementing runs to Monashka Creek.

Due to annually fluctuating levels of Chinook salmon production resulting from both variable hatchery survival rates and brood stock mortality, smolt releases into Monashka Creek have ranged between 29,153 to approximately 82,000 (Appendix G1). Accordingly, individual releases of smolt at the American and Olds rivers have also varied, from approximately 10,000 to 80,000. First year smolt releases into Salonie Creek during 2014 totaled 62,561 and increased to 71,042 in 2015. Although large adult fish from Monashka Creek have been available for the sport fishery and project egg takes since 2005, runs to the American and Olds rivers did not include full-sized adult fish until 2011. Full-sized adult Chinook salmon will return to Salonie Creek beginning in 2017. For 2016, 29,800 Chinook salmon smolt weighing an average of 24 g were stocked into Salonie Creek; however, no other locations were stocked due to a limited number of smolt available. This was due to poor runs and broodstock survival in 2014. The decision was made to try to continue production in Salonie Creek because it is the newest stocking location. All other locations have overlapping age classes that will cover the 1-year lapse in stocking.

In recent years, SWHS estimates of effort and catch attributable to the enhancement project have been intermittently available for some or all locations of the enhanced Chinook salmon sport fishery. Additionally, anecdotes from both freshwater and marine anglers targeting runs to Monashka Creek indicate that a few hundred of these adult fish have been harvested annually in recent years.

Anglers targeting Chinook salmon within the Kodiak Road Zone are subject to the same freshwater and marine bag, possession, and annual limits in effect for the remainder of the KRA. However, Chinook salmon harvested in Monashka Bay are excluded from the current marine waters guideline harvest level.

## **OTHER FISHERIES**

Although relatively large runs of Chinook salmon are present in several AP-AIRA drainages, the remote location and associated high cost of accessing these fisheries has largely limited current angling effort to a small number of remote lodges offering exclusive services. Very few unguided anglers frequent any of these fisheries. The low effort levels preclude reliable estimates

for catch and harvest from the SWHS. However, statistics available from guided angler logbooks are generally reflective of total effort due to the lack of participation by unguided anglers. The limited number of guide operators utilizing these Chinook salmon stocks requires that logbook catches remain confidential, and therefore are not presented in this report. Drainages in the AP–AIRA supporting Chinook salmon populations currently exploited by sport fisheries include the Nelson (Sapsuk), Ilnik, Cinder, Sandy, Meshik, and King Salmon rivers.

## **COHO SALMON FISHERIES**

Coho salmon runs to the KMA include a substantial number of large and small stocks that together support the area’s most popular sport fishery for both resident and nonresident anglers. Because of this abundant resource, the highest angler effort levels are concentrated near population centers where the least expensive access to the sport fishery is available. Accordingly, drainages adjacent to the Kodiak Road Zone are the most heavily exploited and are consequently prioritized for escapement monitoring and responsive management. The marine waters coho salmon sport fishery is also mostly utilized near the Kodiak Road Zone, particularly within the area of Chiniak Bay. In general, angler exploitation rates in the sport fishery outside the Road Zone are relatively light in comparison to the historical abundance of fish. Remotely accessible coho salmon fishing is most popular in nearshore marine waters next to streams draining Shuyak Island and also at several locations along the northern end of nearby Afognak Island. Like the Chinook salmon fisheries, angler effort levels on coho salmon stocks in the AP–AIRA are small to the extent that annual estimates of catch and harvest by individual location are rarely available from the SWHS.

Although KMA coho salmon are also harvested by subsistence fishermen and are a target species in local commercial fisheries, a formal allocation of these stocks through the BOF has not occurred or been deemed necessary by users. Consequently, at the current time there are no coho salmon regulatory management plans pertaining to sport fisheries occurring within the management area.

The primary management objective for KMA coho salmon stocks is to achieve and maintain sustained yield of the stocks through fisheries monitoring and attainment of established escapement goals (EGs). Because of run timing and associated environmental factors as well as budgetary constraints, few KMA coho salmon runs are annually monitored for escapement using weirs. Consequently, spawning assessment is mostly limited to escapement index counts obtained from ground surveys. To ensure stocks are conserved, when necessary, angler harvests can be limited by reducing daily and seasonal bag limits, prohibiting bait, and reducing time and areas open to fishing. Coho salmon sport fishing regulations along the Road Zone have been both liberalized and restricted by emergency order (EO) to attempt to achieve escapement objectives on several occasions.

During the last 10 years, total freshwater harvests of major KMA coho salmon fisheries have ranged from 8,186 to 21,644 fish with an average of 15,280 fish, although harvest statistics varied by an even wider margin in the same period for some individual drainages (Table 13). Some of these locations reported stable to declining harvests, while others showed increases greater than 100% during consecutive years. Any correlated increases or declines in angler participation are hard to detect, due to the fact that SWHS does not measure species-specific effort.



Table 13.—Statewide Harvest Survey estimates of freshwater coho salmon harvest and catch for selected locations within the Kodiak Management Area, 2006–2015.

| Location                          |         | Year   |        |        |        |        |        |        |        |        |        | Average<br>2006–2015 |
|-----------------------------------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------------------|
|                                   |         | 2006   | 2007   | 2008   | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   |                      |
| Buskin River                      |         |        |        |        |        |        |        |        |        |        |        |                      |
|                                   | Harvest | 6,567  | 5,215  | 4,259  | 5,207  | 2,847  | 3,640  | 1,926  | 4,926  | 5,388  | 4,889  | 4,486                |
|                                   | Catch   | 11,468 | 8,434  | 6,469  | 8,014  | 4,492  | 5,376  | 2,680  | 7,698  | 7,385  | 7,308  | 6,932                |
| Pasagshak River                   |         |        |        |        |        |        |        |        |        |        |        |                      |
|                                   | Harvest | 1,121  | 2,095  | 2,836  | 2,257  | 2,417  | 3,582  | 2,125  | 2,023  | 2,457  | 2,849  | 2,376                |
|                                   | Catch   | 2,459  | 4,964  | 5,588  | 3,942  | 4,371  | 7,211  | 3,055  | 3,991  | 3,962  | 7,704  | 4,725                |
| American River                    |         |        |        |        |        |        |        |        |        |        |        |                      |
|                                   | Harvest | 835    | 980    | 799    | 401    | 390    | 710    | 409    | 790    | 1,323  | 1,268  | 791                  |
|                                   | Catch   | 1,963  | 1,910  | 1,339  | 659    | 1,533  | 1,499  | 779    | 1,203  | 2,245  | 2,253  | 1,538                |
| Olds River                        |         |        |        |        |        |        |        |        |        |        |        |                      |
|                                   | Harvest | 1,617  | 1,401  | 696    | 1,864  | 1,253  | 1,351  | 734    | 1,047  | 5,343  | 2,634  | 1,794                |
|                                   | Catch   | 3,453  | 2,620  | 1,938  | 2,427  | 2,124  | 2,574  | 1,230  | 2,906  | 8,836  | 6,237  | 3,435                |
| Saltery Cove                      |         |        |        |        |        |        |        |        |        |        |        |                      |
|                                   | Harvest | 1,023  | 580    | 823    | 798    | 1,142  | 1,301  | 533    | 1,574  | 2,010  | 2,344  | 1,213                |
|                                   | Catch   | 1,981  | 909    | 1,771  | 1,448  | 1,683  | 2,398  | 856    | 3,698  | 4,259  | 5,051  | 2,405                |
| Karluk River and Lagoon           |         |        |        |        |        |        |        |        |        |        |        |                      |
|                                   | Harvest | 2,903  | 1,365  | 1,236  | 1,881  | 735    | 675    | 736    | 1,263  | 505    | 866    | 1,217                |
|                                   | Catch   | 5,670  | 5,191  | 4,755  | 11,038 | 3,235  | 3,003  | 1,183  | 2,708  | 1,068  | 4,995  | 4,285                |
| Ayakulik River                    |         |        |        |        |        |        |        |        |        |        |        |                      |
|                                   | Harvest | 752    | 391    | 593    | 236    | 47     | —      | —      | —      | 330    | —      | 392                  |
|                                   | Catch   | 2,957  | 3,828  | 4,742  | 2,724  | 1,723  | —      | —      | —      | 4,756  | —      | 3,455                |
| Alaska Peninsula–Aleutian Islands |         |        |        |        |        |        |        |        |        |        |        |                      |
|                                   | Harvest | 2,118  | 2,218  | 4,641  | 6,257  | 3,351  | 1,892  | 1,723  | 1,950  | 4,288  | 3,250  | 3,169                |
|                                   | Catch   | 7,894  | 4,206  | 15,022 | 12,875 | 8,608  | 5,281  | 9,291  | 5,299  | 16,880 | 20,916 | 10,627               |
| Total                             |         |        |        |        |        |        |        |        |        |        |        |                      |
|                                   | Harvest | 16,936 | 14,245 | 15,883 | 18,901 | 12,182 | 13,151 | 8,186  | 13,573 | 21,644 | 18,100 | 15,280               |
|                                   | Catch   | 37,845 | 32,062 | 41,624 | 43,127 | 27,769 | 27,342 | 19,074 | 27,503 | 49,391 | 54,464 | 36,020               |

Source: Statewide Harvest Survey (SWHS) estimates (Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish [cited November 2016]. Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>).

Note: An en dash means insufficient survey responses to generate an estimate.

## **KODIAK ROAD ZONE**

### **Fishery Description**

With logistically convenient access for anglers and a historically high abundance of fish, the freshwaters of the Kodiak Road Zone are a mainstay of the KMA coho salmon sport fishery. Kodiak roads are intersected by at least 14 fishable streams supporting modest to large coho salmon runs, plus 3 nearby drainages accessible by ATV trail routes and aircraft. Some of the more productive road system coho salmon stocks are in the Buskin, Pasagshak, Saltery, Olds, Miam, and American rivers (Figure 3).

Coho salmon runs in Road Zone streams typically begin during mid-August and, in some drainages, continue through early November. Spawning occurs from late October through December and typically peaks in early to mid-November. Spawning areas include both mainstem stream sections above intertidal zones and most tributary creeks. Some shoal spawning reportedly also occurs within the Pasagshak River drainage along the northeastern shoreline of Lake Rose Tead.

Uplands surrounding Road Zone streams targeted by coho salmon anglers include municipal, state, and Alaska Native corporate landownership. Angler access to the sport fishery has historically been mostly unrestricted, due in part to a recently settled 30-year ownership dispute over the majority of Alaska Native controlled lands. Current public access to the fishery across these uplands is on a permit-only basis at this time.

### **Historical Catch**

From 2006 to 2015, published SWHS estimates of freshwater catch and harvest of Road Zone coho salmon have consistently been available only for the Buskin, Pasagshak, American, Olds, and Saltery river drainages. Among these individual locations, most fish were taken from Buskin River waters, with an annual average harvest of 4,486 fish accounting for about 40% of the KMA average harvest of these locations in the same period (Table 13). By comparison, 10-year average harvests for the Pasagshak, American, Olds, and Saltery river drainages ranged between 791 and 2,637 fish. Despite some large fluctuations in annually estimated harvest totals by individual stream between 2006 and 2015, harvest levels for these Road Zone drainages remained relatively stable or even declined. For all 5 locations, anglers reported releasing about 2 coho salmon for each 1 harvested.

Catch reports since 2006 from the ADF&G Freshwater Logbook Database for the Kodiak Road Zone include significant guided angler activity at the Pasagshak and Saltery rivers. At Pasagshak River, annual harvests have been moderate, ranging between 10 and 98 fish (Table 14). Reported Saltery River harvests were much higher, ranging from 236 to 593 fish (Table 14). At both drainages, guided anglers have reportedly released between 1 and 5 coho salmon for each 1 harvested (Table 15).

Table 14.–Guided angler freshwater coho salmon harvest for selected KMA streams, 2006–2015.

| Stream                   | 2006  | 2007  | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014 | 2015  |
|--------------------------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|
| Ayakulik River           | 502   | 984   | 184   | 216   | 199   | 477   | 295   | 289   | 232  | 582   |
| Olga Bay streams         | 90    | 256   | 214   | 272   | 295   | 539   | 398   | 432   | 264  | 176   |
| Karluk River             | 1,222 | 511   | 604   | 595   | 100   | 134   | 533   | 320   | 98   | 18    |
| Pasagshak River          | 12    | 19    | 50    | 10    | 5     | 98    | 16    | 45    | 23   | 35    |
| Saltery River            | 593   | 294   | 484   | 295   | 236   | 565   | 340   | 347   | 343  | 378   |
| Westside Kodiak Streams  | 358   | 377   | 132   | 166   | 115   | 255   | 115   | 223   | 181  | 453   |
| Alaska Peninsula Streams | 1,544 | 1,726 | 1,707 | 1,949 | 1,431 | 1,614 | 1,436 | 1,293 | 976  | 1,228 |

*Source:* Freshwater Logbook Database. (Alaska Department of Fish and Game, Division of Sport Fish. 2006 to present. Accessed September 3, 2016. [URL not publicly available as some information is confidential. Contact Research and Technical Services for data requests]).

Table 15.–Guided angler freshwater coho salmon released for selected KMA streams, 2006–2015.

| Stream                   | 2006  | 2007  | 2008  | 2009  | 2010  | 2011   | 2012  | 2013  | 2014  | 2015  |
|--------------------------|-------|-------|-------|-------|-------|--------|-------|-------|-------|-------|
| Ayakulik River           | 1,440 | 3,586 | 1,743 | 1,932 | 1,483 | 2,000  | 1,142 | 1,503 | 3,313 | 2,573 |
| Olga Bay streams         | 61    | 200   | 122   | 236   | 135   | 277    | 76    | 137   | 84    | 76    |
| Karluk River             | 1,696 | 410   | 423   | 571   | 196   | 510    | 131   | 380   | 81    | 570   |
| Pasagshak River          | 17    | 84    | 209   | 99    | 58    | 50     | 92    | 129   | 122   | 7     |
| Saltery River            | 737   | 523   | 283   | 479   | 94    | 1,145  | 366   | 1,088 | 562   | 255   |
| Westside Kodiak Streams  | 1,813 | 749   | 374   | 361   | 298   | 1,590  | 368   | 1,308 | 257   | 1,164 |
| Alaska Peninsula Streams | 6,429 | 2,980 | 6,513 | 6,831 | 5,709 | 10,542 | 6,208 | 3,606 | 4,613 | 6,246 |

*Source:* Freshwater Logbook Database. (Alaska Department of Fish and Game, Division of Sport Fish. 2006 to present. Accessed September 3, 2016. [URL not publicly available as some information is confidential. Contact Research and Technical Services for data requests]).

## Escapement

Because of high exploitation rates by anglers as well as other users, coho salmon escapements to Road Zone drainages are monitored more closely than those for other stocks within the KMA. Buskin River escapements are monitored by SF through operation of a salmon counting weir established in 1985 approximately one-half mile above the stream terminus. Harvests in the sport fishery occurring upstream of the weir are subtracted from the total count to estimate of escapement in a given year.

From 2006 to 2015, weir counts of Buskin River coho salmon ranged from 5,291 to 13,348 fish and averaged 7,827; more recently in 2016, the Buskin River saw a record low weir count of 2,513 coho salmon (Appendix D4). Estimated escapements from 2006 to 2015 followed a downward trend beginning in 2010 that culminated in 2015 with the lowest escapement since weir counts began of 3,363 (Figure 8). It should be noted that during most years, some proportion of the total Buskin River count is derived from interpolated values to substitute for daily counts lost as a result of periodic high water events that render the weir inoperable. Even with the recent and pronounced downward trend in abundance of spawning fish, Buskin River coho salmon escapements have historically achieved the Buskin River coho salmon BEG range in effect at the time of 4,700 to 8,700 fish.

Coho salmon runs to other Road Zone drainages are annually monitored by late-season ground-based surveys to obtain index counts of escapement. In addition to the Buskin River, coho salmon lower-bound SEG escapement goals have been established for 3 Road Zone drainages: Pasagshak River (1,200), American River (400), and Olds River (1,000). A summary of counts obtained for these and other streams between 2006 and 2015 are provided in Table 16.

### Buskin River Coho Salmon Escapement

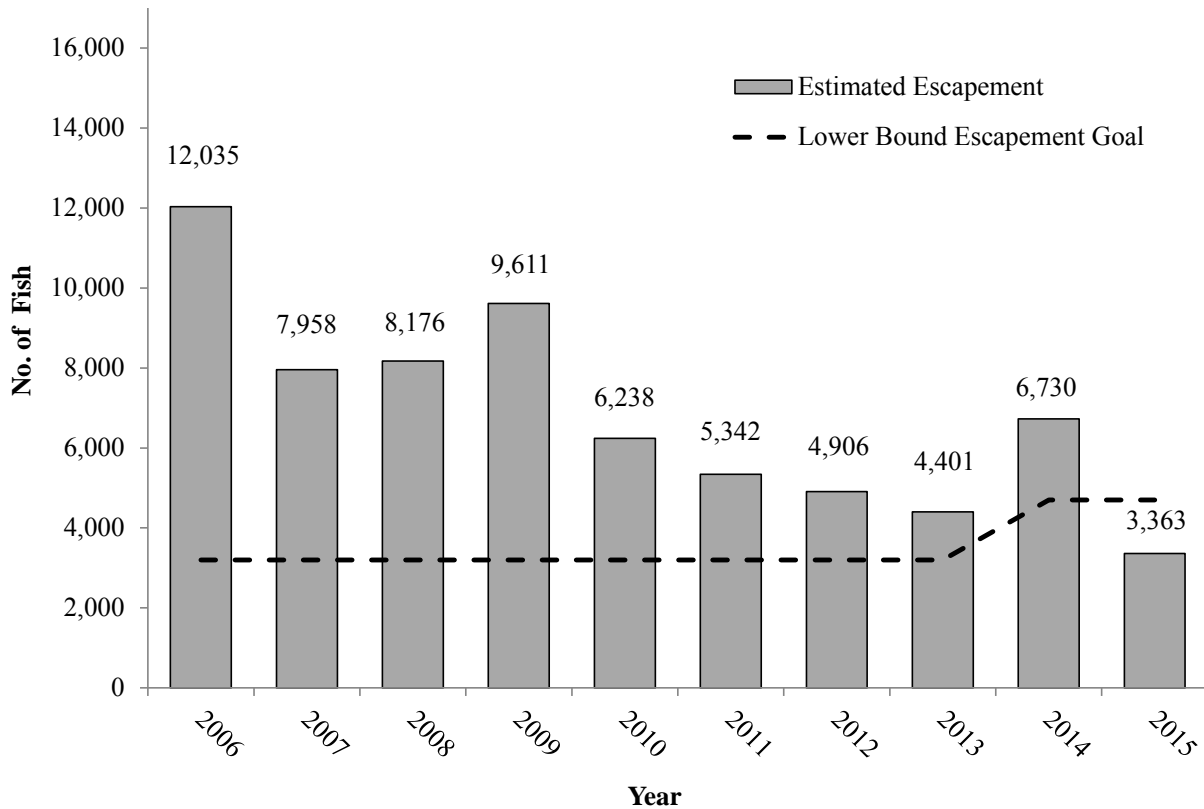


Figure 8.—Estimated escapement of Buskin River coho salmon, 2006–2015.

Source: Statewide Harvest Survey (SWHS) estimates (Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish [cited November 2016]. Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>); Fuerst 2015; B. Fuerst, Fishery Biologist, ADF&G, Kodiak, unpublished data.

### Fishery Management and Objectives

Regulations for the Road Zone coho salmon sport fishery are more restrictive than elsewhere in the KMA due to the relatively high levels of angler effort and associated potential for overharvest. With the exception of the Buskin River, which has more liberalized regulations resulting from a long trend of escapements surplus to the BEG, nearly all streams intersecting Road Zone highways are annually closed to upstream salmon fishing from 1 August to 15 September in order to conserve inriver runs. In addition, Road Zone coho salmon daily bag and possession limits are uniformly set at 2 fish to help limit harvest rates. Because Buskin River runs are monitored by use of the weir, bag limits can be reduced or increased inseason as needed to achieve the BEG. A lack of inseason run strength information for the other Road Zone streams

prescribes a more passive management approach, with regulatory changes to angler methods and means instituted in response to escapement trends over time based on results of the postfishery index surveys.

In an attempt to refine management of the Buskin River coho salmon run, weirs have been operated at both the traditional, lower weir site and at the outlet of Buskin Lake to try to develop an index of escapement of coho salmon into Buskin Lake. The Buskin Lake weir site was added primarily due to frequent flooding of the lower weir site, which makes it necessary to estimate portions of the escapement when counting is impossible. The weir site at Buskin Lake is not as prone to these flood events; however, not all of the coho salmon run passes the Buskin Lake weir and a portion of the run remains in the river to spawn. Operation of both weirs for the duration of the coho salmon run will eventually allow an index to be used to estimate overall escapement of Buskin River coho salmon using counts from the Buskin Lake weir alone. In addition to operating both weirs concurrently, ADF&G has recently undertaken a radiotelemetry study of Buskin River coho salmon to further refine this index of escapement. Coho salmon are tagged with both radio and visual tags at the lower weir site and are tracked throughout the drainage using both fixed and mobile tracking units with the aim to more accurately determine timing and migration patterns of coho salmon as they enter the Buskin River.

Table 16.–Coho salmon escapement survey index counts for selected drainages within the Kodiak Road Zone, 2006–2016.

| Location                 | Year  |       |       |       |       |       |       |       |        |       | Average | 2016  |
|--------------------------|-------|-------|-------|-------|-------|-------|-------|-------|--------|-------|---------|-------|
|                          | 2006  | 2007  | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014   | 2015  |         |       |
| American R.              | 2,033 | 307   | 700   | 639   | 58    | 1,061 | 427   | 841   | 1,595  | 530   | 819     | 500   |
| Chiniak C.               | 127   | 161   | 21    | 17    | 1     | 20    | 66    | 43    | 31     | ns    | 54      | 3     |
| Felton C.                | 166   | 83    | 232   | 160   | ns    | 633   | 17    | 50    | 22     | 33    | 155     | 27    |
| Monashka C. <sup>a</sup> | 238   | 185   | 19    | 132   | 37    | 36    | 300   | 679   | 230    | 100   | 196     | 60    |
| Myrtle C.                | 61    | 25    | ns    | 0     | ns    | ns    | ns    | ns    | ns     | ns    | 29      | ns    |
| Olds R.                  | 1,912 | 868   | 656   | 697   | 127   | 1,003 | 624   | 2,145 | 1,320  | 1,357 | 1,071   | 1,634 |
| Pasagshak R.             | 937   | 1,896 | 3,875 | 2,385 | 1,971 | 1,083 | 3,132 | 1,648 | 4,934  | 1,790 | 2,365   | 737   |
| Pillar C. <sup>a</sup>   | 300   | 130   | 78    | 89    | 56    | 248   | 858   | 1,043 | 750    | 180   | 373     | 116   |
| Roslyn C.                | 328   | 198   | 87    | ns    | 18    | 293   | 159   | 460   | 3,900  | 271   | 635     | 45    |
| Russian C.               | 694   | 463   | 262   | 144   | 97    | 158   | 39    | 214   | 246    | 70    | 239     | 345   |
| Salonie C.               | 1,111 | 326   | 970   | ns    | 90    | 942   | 304   | 286   | 509    | 215   | 528     | 218   |
| Sargent C.               | 334   | 241   | 264   | 74    | 44    | 135   | 90    | 40    | 75     | 39    | 134     | 107   |
| Twin C.                  | 37    | 34    | 13    | 27    | ns    | ns    | ns    | ns    | ns     | ns    | 28      | ns    |
| Total                    | 8,278 | 4,917 | 7,177 | 4,364 | 2,499 | 5,612 | 6,016 | 7,449 | 13,612 | 4,585 | 6,451   | 3,792 |

Source: Data archives, ADF&G Division of Sport Fish, Kodiak Area Office.

Note: The abbreviation “ns” means not surveyed.

<sup>a</sup> Monashka and Pillar creeks coho salmon runs were influenced by the release of hatchery fish in 2012–2014.

## 2015 and 2016 Sport Fisheries

During 2015, a total of 4,889 coho salmon were harvested from the Buskin River, which was near the 2006–2015 average harvest of 4,486 fish (Table 13). Few coho salmon were counted in

the Buskin River until the end of September, probably due to uncommonly low water conditions. The weir was kept in later to accommodate this and virtually all fish were counted in the first week of October until a flood washed the weir out. A postweir estimate was added after this because much of the coho salmon escapement continued to enter the river. Bag and possession limits remained at 2 fish during the entire run due to the expected arrival of more coho salmon returns; however, the final 2015 estimated escapement of 3,363 coho salmon (Figure 8) fell below the lower end of the current 4,700–9,600 BEG range.

In 2016, poor weir counts prompted a closure of the Buskin River coho salmon fishery on 16 September. Despite consistent water levels and some early arrivals of coho salmon, the bulk of the run had been counted by early September and counts trailed off after this. This followed a similar trend seen in many locations throughout Southcentral Alaska. The final weir count on the Buskin River was 2,513 coho salmon, which was well below the BEG. Final escapement estimates are pending 2016 SWHS results.

Anglers reported lower than average inriver catches of coho salmon at other Road Zone drainages throughout the 2015 run; however, harvests near the mouths of the rivers and in nearby saltwaters were reported to be much higher than normal. Guided angler harvests reported for the Pasagshak and Saltery rivers were comparable to those from the preceding 3 years, although guided anglers reported releasing far fewer coho salmon in these drainages than in many years (Tables 14 and 15). Most postfishery escapement indices were lower than average historical counts for each stream surveyed, which could reflect that the surveys were conducted at less than optimal times due to the late entry of returning coho salmon, or the sport harvests could have had a more significant impact due to the inability of coho salmon to migrate upriver during the persistent low water conditions (Table 16). However, survey counts indicated that current sustainable escapement goal (SEG<sup>5</sup>) threshold numbers were achieved in 2015 for the American, Pasagshak, and Olds rivers. In 2016, lower bound SEGs were achieved for the American and Olds rivers but not Pasagshak River according to ADF&G foot surveys (Table 16). Anglers reported higher than average catch at the Olds River but lower than average catch at the American and Pasagshak rivers, and many other drainages. This may be due to lower than average runs but also warmer than normal temperatures throughout September that probably made fish lethargic and less prone to biting.

## **MARINE WATERS**

### **Fishery Description**

Trolling for coho salmon in marine waters of the KMA is a well-established sport fishery which, like the troll fishery for Chinook salmon, largely occurs in nearshore waters adjacent to the City of Kodiak. Angler reports indicate that although the fishery generally lasts from mid-July through mid-September, peak effort occurs during August. Many harvested fish taken later in the season are probably stocks of local origin, whereas those caught earlier may also consist of migratory fish because of the disparity between early season harvests and the typical run timing for most KMA stocks. It's also possible that as a result of the typical run timing of coho salmon to the Kitoi Bay hatchery facility located on Afognak Island, coho salmon production from this

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<sup>5</sup> The sustainable escapement goal is a level of escapement indicated by an index.

facility, which has occurred since the early 1990s, has significantly supplemented the marine waters sport fishery during July and early August<sup>6</sup>.

Similar to the KRA marine waters Chinook salmon fishery, increased local interest in trolling for coho salmon has coincided with growth of the guided angler sport fishery. Harvests of coho salmon by charter vessel clients currently make up approximately half of the average total harvest. Angler harvests of coho salmon in marine waters of the AP–AIRA are relatively negligible, typically accounting for less than 10% of the total KMA harvest annually estimated by the SWHS.

## **Historical Catch**

Marine waters KMA coho salmon harvests averaged 15,902 fish in the KMA from 2006 to 2015 (Table 17). The KRA marine waters harvests during this period made up 90% of the overall KMA total. Relatively few caught fish were released during any years reported, averaging less than 1 fish released for every 1 harvested.

Guided angler coho salmon harvests reported in logbooks since 2006 have ranged between 3,418 and 12,571 fish, with the AP–AIRA harvest composing a very small fraction of the annual total (Table 18). The most significant annual fluctuations in harvest have occurred in Chiniak Bay waters adjacent to the Kodiak Road Zone, where 3,404 fish were harvested in 2006 but only 211 were harvested in 2014. Unlike SWHS estimates for all anglers, historical coho salmon catches reported in logbooks show that typically few fish are released. During most years, and regardless of fishing location, virtually every fish caught was subsequently harvested.

## **Fishery Management and Objectives**

The KMA marine waters coho salmon fishery is managed passively through the establishment of regulatory daily bag and possession limits applied uniformly in all waters except within 1 mile of the coastline bordering the Kodiak Road Zone and Spruce Island, where more restrictive limits prevail to provide a conservation buffer for local coho salmon stocks. The daily bag and possession limits for coho salmon outside the 1-mile boundary are 5 fish, whereas inside the Road Zone perimeter, the bag and possession limits are currently set at 2 fish. There is no annual limit established for this fishery.

## **2015 Sport Fishery**

The 2015 coho salmon harvest of 20,189 fish in KMA marine waters was well above the recent 10-year average of 15,902 fish (Table 17). The 2015 SWHS estimated harvest in Chiniak Bay of 8,078 fish increased dramatically over the 2014 estimate (3,186 fish), probably due to increased availability of these fish in late August and September while they waited in marine waters for increased freshwater levels to navigate local streams. Harvest in the AP–AIRA remained virtually the same in 2015 compared to the previous several years, but at 864 fish, this harvest still composed only about 4% of the KMA marine waters total.

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<sup>6</sup> Kodiak Regional Aquaculture Association. 2015. Kitoi Bay Hatchery Annual Management Plan. Kodiak Regional Aquaculture Association, Kodiak.

Table 17.—Statewide Harvest Survey estimates of Kodiak Management Area marine waters coho salmon harvest and catch, 2006–2015.

| Year      | Chiniak Bay |        | Afognak and Shuyak islands |       | Total Kodiak Regulatory Area |        | Alaska Peninsula and Aleutian Islands |       | Total Kodiak Management Area |        |
|-----------|-------------|--------|----------------------------|-------|------------------------------|--------|---------------------------------------|-------|------------------------------|--------|
|           | Harvest     | Catch  | Harvest                    | Catch | Harvest                      | Catch  | Harvest                               | Catch | Harvest                      | Catch  |
| 2006      | 5,992       | 8,564  | 3,800                      | 5,922 | 15,622                       | 24,148 | 627                                   | 1,067 | 15,622                       | 24,148 |
| 2007      | 8,921       | 10,334 | 4,962                      | 7,138 | 21,925                       | 29,725 | 1,073                                 | 1,365 | 21,925                       | 29,725 |
| 2008      | 10,820      | 13,372 | 3,319                      | 4,568 | 18,652                       | 24,578 | 219                                   | 1,533 | 18,652                       | 24,578 |
| 2009      | 8,244       | 9,821  | 2,531                      | 4,101 | 17,612                       | 23,978 | 838                                   | 1,772 | 17,612                       | 23,978 |
| 2010      | 4,202       | 4,822  | 4,152                      | 5,174 | 14,569                       | 18,591 | 1,022                                 | 1,492 | 14,569                       | 18,591 |
| 2011      | 5,377       | 7,433  | 3,173                      | 4,820 | 13,735                       | 18,416 | 582                                   | 1,177 | 13,735                       | 18,416 |
| 2012      | 4,906       | 5,769  | 2,522                      | 3,402 | 12,897                       | 15,328 | 635                                   | 1,278 | 12,897                       | 15,328 |
| 2013      | 3,311       | 3,698  | 4,998                      | 6,126 | 13,428                       | 17,448 | 763                                   | 1,179 | 13,428                       | 17,448 |
| 2014      | 3,186       | 3,586  | 2,067                      | 2,751 | 10,391                       | 13,874 | 646                                   | 768   | 10,391                       | 13,874 |
| 2015      | 8,078       | 10,421 | 2,135                      | 3,191 | 20,189                       | 28,681 | 864                                   | 983   | 20,189                       | 28,681 |
| Average   |             |        |                            |       |                              |        |                                       |       |                              |        |
| 2006–2015 | 6,304       | 7,782  | 3,366                      | 4,719 | 15,902                       | 21,477 | 727                                   | 1,261 | 15,902                       | 21,477 |

Source: Statewide Harvest Survey (SWHS) estimates (Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish [cited November 2016]. Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>).



Table 18.—Guided angler sport harvest and release of Kodiak Management Area marine waters coho salmon, 2006–2015.

| Location  | Year | Total effort |         | Coho salmon |                       |
|---|------|--------------|---------|-------------|-----------------------|
|   |      | Vessels      | Clients | Harvest     | Released <sup>a</sup> |
| Chiniak Bay   |      |              |         |             |                       |
|   | 2006 | 61           | 6,589   | 3,404       | 54                    |
|   | 2007 | 59           | 5,909   | 1,936       | 62                    |
|   | 2008 | 69           | 5,468   | 3,166       | 88                    |
|   | 2009 | 54           | 3,573   | 1,551       |                       |
|   | 2010 | 51           | 4,303   | 775         |                       |
|   | 2011 | 47           | 3,488   | 1,459       |                       |
|   | 2012 | 47           | 3,470   | 963         |                       |
|   | 2013 | 21           | 1,821   | 339         |                       |
|   | 2014 | 20           | 2,963   | 211         |                       |
|   | 2015 | 26           | 2,039   | 1,474       |                       |
| Afognak and Shuyak islands                            |      |              |         |             |                       |
|   | 2006 | 45           | 2,629   | 2,477       | 438                   |
|   | 2007 | 51           | 3,741   | 4,082       | 513                   |
|   | 2008 | 47           | 2,903   | 2,514       | 106                   |
|   | 2009 | 49           | 2,824   | 2,876       |                       |
|   | 2010 | 50           | 3,118   | 2,858       |                       |
|   | 2011 | 49           | 2,126   | 3,012       |                       |
|   | 2012 | 36           | 1,926   | 1,611       |                       |
|   | 2013 | 41           | 3,515   | 1,652       |                       |
|   | 2014 | 45           | 2,968   | 2,112       |                       |
|   | 2015 | 29           | 2,730   | 3,510       |                       |
| Total Kodiak Regulatory Area                          |      |              |         |             |                       |
|   | 2006 | 156          | 14,312  | 9,706       | 1,264                 |
|   | 2007 | 158          | 15,504  | 10,593      | 903                   |
|   | 2008 | 144          | 13,625  | 8,597       | 260                   |
|   | 2009 | 131          | 11,250  | 8,010       |                       |
|   | 2010 | 123          | 12,039  | 7,734       |                       |
|   | 2011 | 125          | 15,134  | 9,144       |                       |
|   | 2012 | 121          | 14,268  | 4,323       |                       |
|   | 2013 | 104          | 12,319  | 3,382       |                       |
|   | 2014 | 103          | 12,805  | 5,262       |                       |
|   | 2015 | 100          | 12,249  | 12,496      |                       |
| Alaska Peninsula and Aleutian Islands Regulatory Area |      |              |         |             |                       |
|   | 2006 | 12           | 546     | 57          | 1                     |
|   | 2007 | 16           | 673     | 42          | 7                     |
|   | 2008 | 18           | 581     | 53          | 24                    |
|   | 2009 | 28           | 719     | 349         |                       |
|   | 2010 | 32           | 995     | 515         |                       |
|   | 2011 | 25           | 314     | 312         |                       |
|   | 2012 | 8            | 335     | 20          |                       |
|   | 2013 | 7            | 325     | 36          |                       |
|   | 2014 | 5            | 130     | 130         |                       |
|   | 2015 | 8            | 221     | 75          |                       |

-continued-

Table 18.–Page 2 of 2.

| Location                     | Year | Total effort |         | Coho salmon |                       |
|------------------------------|------|--------------|---------|-------------|-----------------------|
|                              |      | Vessels      | Clients | Harvest     | Released <sup>a</sup> |
| Total Kodiak Management Area |      |              |         |             |                       |
|                              | 2006 | 168          | 17,272  | 9,852       | 1,293                 |
|                              | 2007 | 174          | 17,953  | 10,673      | 903                   |
|                              | 2008 | 162          | 15,471  | 9,048       | 335                   |
|                              | 2009 | 159          | 13,047  | 9,442       |                       |
|                              | 2010 | 155          | 14,149  | 8,996       |                       |
|                              | 2011 | 150          | 15,448  | 9,987       |                       |
|                              | 2012 | 129          | 14,603  | 4,343       |                       |
|                              | 2013 | 111          | 12,644  | 3,418       |                       |
|                              | 2014 | 108          | 12,935  | 5,392       |                       |
|                              | 2015 | 106          | 12,470  | 12,571      |                       |

*Source:* Saltwater Logbook Database. (Alaska Department of Fish and Game, Division of Sport Fish. 2006 to present. Accessed September 3, 2016. [URL not publicly available as some information is confidential. Contact Research and Technical Services for data requests]).

<sup>a</sup> The column for released coho salmon was removed from saltwater logbooks in 2009.

## ENHANCED COHO SALMON FISHERIES

Releases of anadromous coho salmon have occurred annually at several Road Zone locations since the 1980s until 2014 (Schwarz et al. 2002) but were reinstated in 2016. Since 2005, coho salmon smolt production, substituting for Chinook salmon smolt production shortfalls, has also supplemented coho salmon fingerling releases in 2 drainages and has also been used to supplement wild coho salmon abundance at 2 others.

As a result of changing SSP goals and variable survival rates, total coho salmon fingerling releases between 2006 and 2014 ranged from 27,669 to 68,814 (Appendix G1). Smolt releases have also varied considerably, from zero fish to 289,062 fish, and were reinstated in 2016 due to shortfalls in Chinook salmon production. Currently, under a revised cooperative agreement with ADF&G and KRAA, coho salmon releases only occur to supplement shortfalls in Chinook salmon production with no regular releases planned for sportfish program enhancement activities. Releases of coho salmon to account for shortfalls in Chinook salmon production have occurred in Pillar and Monashka creeks, and Island and Mission lakes. Returns of anadromous hatchery coho salmon were last seen in 2014, but will return in 2017.

Target release sizes for coho salmon smolt specified in the SF–KRAA cooperative agreement are set at 15 g. Smolt stocking usually occurs between March and May. Unlike the Chinook salmon releases, coho salmon smolt are not generally held artificially for imprinting, although the timing of each stocking is designed to promote a reasonable period of acclimation and natural rearing. Adults return exclusively at ocean-age-1, and some percentage are known to survive long enough to spawn.

Nearly all sport fishing effort in this enhanced fishery has occurred in the nearshore marine waters of Mill Bay and Monashka Bay, as well as waters adjacent to Mayflower and Mission beaches (Figure 3).

Since 2006, up to 6 Road Zone lakes have been selected for enhancement with landlocked coho salmon; however, a renewed cooperative agreement with KRAA has eliminated coho salmon stocking as part of the sport fish enhancement program, except when necessary to make up for shortfalls in Chinook salmon production (Appendix G2). No land-locked coho salmon stocking has occurred since 2014, although coho salmon may still be available for harvest in locations such as Chiniak and Barry lagoons and Southern Lake on Long Island. Stocking efforts have produced populations of spawning, landlocked coho salmon, though the size of these populations is unknown. In landlocked locations, both fingerlings and presmolt probably achieve a harvestable size (6–12 inches) at age 2. Landlocked coho salmon not harvested by age 3 become sexually mature and subsequently die after attempting to spawn. Anecdotal information on declining catch rates in lakes with interrupted stocking suggests that most lakes rely on regular replenishment through hatchery releases to sustain populations.

Road Zone anglers target landlocked coho salmon populations year-round in open water and through the ice. Regulations for this sport fishery include a daily bag and possession limit of 10 fish under 20 inches and 2 fish over 20 inches in length with no annual limit.

## **OTHER FISHERIES**

Although dispersed angler effort for coho salmon occurs annually at or within marine waters adjacent to numerous KMA drainages outside the Kodiak Road Zone, those most significant to the sport fishery overall include the marine waters near the Afognak River, Pauls and Portage river drainages located on the north end of Afognak Island, Shuyak Island streams, and the Uganik, Karluk, and Ayakulik rivers along the west side of Kodiak Island. Individually, these locations rarely support effort levels adequately captured by the SWHS, which indicates that exploitation rates on the affected coho salmon stocks are probably low. Guided angler effort at Afognak Island and Shuyak Island locations appears mostly in Saltwater Logbook Database records, and harvests for these locations have ranged between 1,611 and 4,082 since 2006 (Table 18). Unguided anglers also frequent these and other remote locations, although where available, guided angler logbook harvest statistics generally represent a majority of total effort. In aggregate, annual coho salmon harvests in freshwaters outside the Kodiak Road Zone typically account for less than one-half the number taken within Road Zone lakes and streams.

## **SOCKEYE SALMON FISHERIES**

### **KODIAK ROAD ZONE**

#### **Fishery Description**

Although there are approximately 13 individual KMA sockeye salmon stocks that are of interest to anglers, most sport fishing for this species occurs within the Kodiak Road Zone and targets stocks at the Saltery, Pasagshak, and Buskin rivers (Figure 3). Average annual harvests from the Road Zone fishery account for more than one-half of the KMA total. Exploitation rates by anglers fishing these streams are significant enough to warrant formal consideration of sport harvests for inseason fisheries management and stock assessment purposes. All other KMA stocks are lightly exploited by anglers in terms of both harvest magnitude and proportion of harvest to run size.

## Historical Catch

Guided and unguided angler combined sport harvests of sockeye salmon from the Saltery, Pasagshak, and Buskin river drainages estimated from the SWHS between 2006 and 2015 ranged from 3,189 to 15,408 fish and averaged 8,240 (Table 19). Saltery River accounted for the single largest proportion of the 10-year average total, at 5,080 fish. The small Saltery River annual harvests in 2006 and 2007 were due to the discontinuation of a counting weir from 2004 to 2007, which accumulated sockeye salmon inriver and made them more available to anglers. Annual weir operations on the Buskin River near the lake outlet have also helped sustain fishing opportunity for sockeye salmon directly downstream, although anglers also target natural aggregations of Buskin River fish at a major tributary confluence.

With a few exceptions, the ratio of sockeye salmon released to those harvested in the Kodiak Road Zone has remained relatively consistent from year to year regardless of drainage, to the extent that generally less than 1 fish has been released for every 1 harvested. Consequently, from 2006 to 2015, an average combined total of 4,734 fish were released by anglers fishing the 3 Road Zone drainages (Table 19).

In contrast to harvest statistics reflective of all angling effort, guided sport fishing harvests of sockeye salmon recorded in logbooks indicate that little activity occurs at Road Zone drainages, with Saltery River being the only location where guided anglers harvested more than 150 fish in a given year between 2006 and 2015. In terms of harvest and total catch, annual guided effort on Saltery River sockeye salmon was substantial during these years, ranging as high as 2,278 fish harvested and averaging 1,069 (Table 20).

## Escapement

Sockeye salmon runs are monitored mostly to enable management of commercial fisheries in numerous areas throughout the KMA; many of the runs occurring within the KRA have counting weirs installed annually for this purpose. Escapements for some sockeye salmon runs within the AP–AIRA are also censused using weirs, including those within the Chignik, Sapsuk, Ilnik, King Salmon, Sandy, Bear, Orzinski, and McLees river drainages. Monitoring of other stocks in both regulatory areas is accomplished through aerial escapement index surveys.

One of the principal sockeye salmon runs targeted by sport fishing anglers in the KMA is the Buskin River within the KRA. SF annually operates counting weirs on the Buskin River to permit inseason management of this important sport fishery. Annual weir counts and documentation of harvest removals by the sport fishery and other users have allowed establishment and periodic review of a Buskin River sockeye salmon BEG, currently expressed as a range of 5,000 to 8,000 fish. Timing of the Buskin River run typically peaks during the month of June and is historically 95% complete by the end of July (Appendix D5). Since 2006, sockeye salmon escapements have ranged from 17,734 fish in 2006 to just 5,900 in 2008 (Figure 9). During this 10-year period, the lower bound of the current BEG was achieved in each year and in many years, the upper end of the current BEG was exceeded.

Table 19.—Statewide Harvest Survey estimates of freshwater sockeye salmon harvest and release for selected locations within the Kodiak Management Area, 2006–2015.

| Zone                              | Location               | Year                    |        |        |        |        |        |        |        |        |        | Average |       |
|-----------------------------------|------------------------|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-------|
|                                   |                        | 2006                    | 2007   | 2008   | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   |         |       |
| Kodiak Road                       | Buskin River           |                         |        |        |        |        |        |        |        |        |        |         |       |
|                                   | Harvest                | 1,577                   | 1,509  | 1,159  | 687    | 332    | 1,277  | 1,484  | 1,310  | 4,237  | 3,978  | 1,755   |       |
|                                   | Catch                  | 2,642                   | 3,143  | 1,560  | 1,417  | 699    | 2,285  | 1,938  | 2,395  | 6,165  | 5,807  | 2,805   |       |
|                                   | Pasagshak River        |                         |        |        |        |        |        |        |        |        |        |         |       |
|                                   | Harvest                | 1,159                   | 1,721  | 3,218  | 1,021  | 1,027  | 1,592  | 2,080  | 1,685  | 522    | 31     | 1,406   |       |
|                                   | Catch                  | 2,074                   | 2,645  | 4,527  | 1,346  | 1,351  | 2,616  | 2,972  | 2,506  | 735    | 255    | 2,103   |       |
|                                   | Saltery Cove Drainages |                         |        |        |        |        |        |        |        |        |        |         |       |
|                                   | Harvest                | 453                     | 564    | 5,693  | 4,916  | 4,303  | 3,905  | 3,339  | 9,940  | 10,649 | 7,035  | 5,080   |       |
|                                   | Catch                  | 631                     | 3,574  | 15,802 | 7,418  | 6,082  | 6,146  | 4,031  | 15,103 | 13,590 | 8,289  | 8,067   |       |
|                                   | Total                  |                         |        |        |        |        |        |        |        |        |        |         |       |
|                                   | Harvest                | 3,189                   | 3,794  | 10,070 | 6,624  | 5,662  | 6,774  | 6,903  | 12,935 | 15,408 | 11,044 | 8,240   |       |
|                                   | Catch                  | 5,347                   | 9,362  | 21,889 | 10,181 | 8,132  | 11,047 | 8,941  | 20,004 | 20,490 | 14,351 | 12,974  |       |
|                                   | KMA Remote             | Karluk River and Lagoon |        |        |        |        |        |        |        |        |        |         |       |
|                                   |                        | Harvest                 | 1,276  | 5,342  | 638    | 719    | 684    | 424    | 256    | 2,270  | 1,817  | 1,052   | 1,448 |
| Catch                             |                        | 4,390                   | 12,646 | 4,145  | 5,064  | 2,007  | 1,608  | 1,939  | 4,575  | 3,470  | 2,417  | 4,226   |       |
| Ayakulik River                    |                        |                         |        |        |        |        |        |        |        |        |        |         |       |
| Harvest                           |                        | 478                     | 379    | 1,579  | 899    | 617    | –      | –      | –      | 1,340  | –      | 882     |       |
| Catch                             |                        | 1,801                   | 1,290  | 7,999  | 5,624  | 1,849  | –      | –      | –      | 3,730  | –      | 3,716   |       |
| Alaska Peninsula-Aleutian Islands |                        |                         |        |        |        |        |        |        |        |        |        |         |       |
| Harvest                           |                        | 374                     | 1,375  | 1,351  | 3,311  | 1,189  | 1,012  | 998    | 179    | 1,425  | 1,138  | 1,235   |       |
| Catch                             |                        | 2,157                   | 2,600  | 3,246  | 5,309  | 1,734  | 4,252  | 1,780  | 468    | 2,609  | 2,583  | 2,674   |       |
| Grand total                       |                        |                         |        |        |        |        |        |        |        |        |        |         |       |
| Harvest                           | 5,317                  | 10,890                  | 13,638 | 11,553 | 8,152  | 8,210  | 8,157  | 15,384 | 19,990 | 13,234 | 11,453 |         |       |
| Catch                             | 13,695                 | 25,898                  | 37,279 | 26,178 | 13,722 | 16,907 | 12,660 | 25,047 | 30,299 | 19,351 | 22,104 |         |       |

Source: Statewide Harvest Survey (SWHS) estimates (Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish [cited November 2016]. Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>).

Note: An en dash means insufficient survey responses to generate an estimate.

Table 20.—Guided angler freshwater sockeye salmon harvest and release for selected locations within the KMA, 2006–2015.

| Location                          | Year  |       |       |       |       |       |       |       |       |       | Average<br>2006–2015 |
|-----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------------------|
|                                   | 2006  | 2007  | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  |                      |
| Ayakulik River Drainage           |       |       |       |       |       |       |       |       |       |       |                      |
| Harvest                           | 528   | 661   | 619   | 848   | 434   | 384   | 718   | 396   | 544   | 935   | 607                  |
| Release                           | 1,928 | 1,811 | 2,551 | 2,190 | 1,061 | 653   | 2,185 | 733   | 710   | 1162  | 1,498                |
| Dog Salmon Creek                  |       |       |       |       |       |       |       |       |       |       |                      |
| Harvest                           | 210   | 516   | 894   | 796   | 782   | 790   | 709   | 679   | 576   | 370   | 632                  |
| Release                           | 403   | 178   | 1,181 | 628   | 701   | 761   | 946   | 615   | 439   | 234   | 609                  |
| Olga Bay                          |       |       |       |       |       |       |       |       |       |       |                      |
| Harvest                           | 35    | 122   | 175   | 145   | 156   | 13    | 400   | 130   | 132   | 203   | 151                  |
| Release                           | 60    | 280   | 451   | 235   | 107   | 3     | 160   | 23    | 77    | 59    | 146                  |
| Karluk River Drainage             |       |       |       |       |       |       |       |       |       |       |                      |
| Harvest                           | 1,113 | 2,132 | 611   | 642   | 64    | 8     | 364   | 132   | 54    | 81    | 520                  |
| Release                           | 1,053 | 2,281 | 892   | 933   | 127   | 56    | 397   | 319   | 50    | 80    | 619                  |
| Saltery River Drainage            |       |       |       |       |       |       |       |       |       |       |                      |
| Harvest                           | 114   | 80    | 1,150 | 868   | 1,305 | 2,278 | 1,335 | 1,225 | 1,207 | 1,131 | 1,069                |
| Release                           | 115   | 37    | 894   | 218   | 926   | 1,757 | 788   | 620   | 827   | 526   | 671                  |
| Alaska Peninsula–Aleutian Islands |       |       |       |       |       |       |       |       |       |       |                      |
| Harvest                           | 290   | 304   | 354   | 727   | 664   | 946   | 438   | 294   | 484   | 311   | 481                  |
| Release                           | 851   | 625   | 439   | 424   | 1,109 | 772   | 619   | 565   | 782   | 527   | 671                  |

Source: Freshwater Logbook Database. (Alaska Department of Fish and Game, Division of Sport Fish. 2006 to present. Accessed September 3, 2016. [URL not publicly available as some information is confidential. Contact Research and Technical Services for data requests]).

### Buskin River Sockeye Salmon Escapement

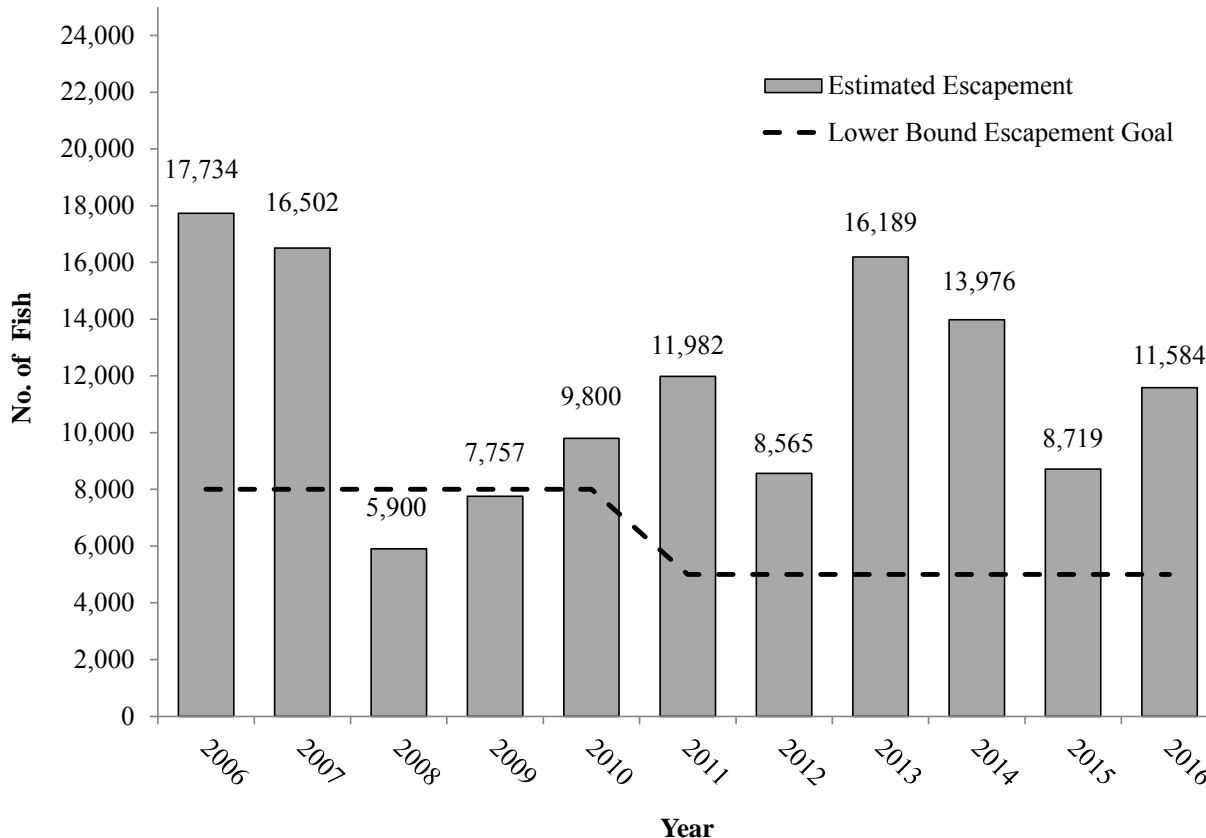


Figure 9.—Estimated escapement of Buskin River sockeye salmon, 2006–2016.

Source: Fuerst 2015; B. Fuerst, Fishery Biologist, ADF&G, Kodiak, unpublished data.

Within the last decade, Saltery River sockeye salmon escapements have been monitored both through the operation of a counting weir and the periodic use of aerial-based surveys. The escapement goal for the Saltery River population is based on historical escapement and age information, and is a range of 15,000 to 35,000 fish. Escapements documented using a weir annually from 2008 through 2015 have averaged 36,797 fish (Table 21). The Saltery River run peaks later than that of the nearby Buskin River, usually in late July (Appendix D6). The 2015 Saltery River escapement of 42,468 fish was above the most recent 10-year average (36,797 fish) and above the BEG. The 2016 escapement of 57,867 was the highest count since 2008 and well above the BEG.

The Pasagshak River sockeye salmon run has more recently (since 2011) been monitored by a weir and counts have ranged from 1,582 to 13,402 since the weir was installed. In 2014 and 2015, runs of sockeye salmon fell short of the lower bound SEG of 3,000 fish; however, in 2016, the SEG was met with 7,053 sockeye salmon.

Table 21.—Sockeye salmon weir counts for selected locations within the Kodiak Management Area, 2006–2016.

| Year      | Buskin River | Saltery River <sup>a</sup> | Karluk River (early run) | Ayakulik River | Dog Salmon Creek | Total   |
|-----------|--------------|----------------------------|--------------------------|----------------|------------------|---------|
| 2006      | 17,734       |                            | 200,641                  | 87,780         | 108,343          | 414,498 |
| 2007      | 16,502       |                            | 279,390                  | 283,042        | 139,808          | 718,742 |
| 2008      | 5,900        | 49,266                     | 82,071                   | 162,888        | 153,276          | 453,401 |
| 2009      | 7,757        | 45,651                     | 52,466                   | 315,154        | 147,798          | 568,826 |
| 2010      | 9,800        | 26,809                     | 70,544                   | 262,327        | 135,100          | 504,580 |
| 2011      | 11,982       | 30,768                     | 86,642                   | 261,141        | 180,603          | 571,136 |
| 2012      | 8,565        | 28,188                     | 186,810                  | 328,254        | 154,416          | 706,233 |
| 2013      | 16,189       | 39,456                     | 232,936                  | 282,164        | 136,059          | 706,804 |
| 2014      | 13,976       | 31,772                     | 236,144                  | 297,711        | 217,461          | 797,064 |
| 2015      | 8,719        | 42,468                     | 233,036                  | 326,435        | 235,813          | 846,471 |
| Average   |              |                            |                          |                |                  |         |
| 2006–2015 | 11,712       | 36,797                     | 166,068                  | 260,690        | 160,868          | 604,587 |
| 2016      | 11,584       | 57,867                     | 164,760                  | 254,967        | 150,469          | 639,647 |

Source: Fuerst 2015; B. Fuerst, Fishery Biologist, ADF&G, Kodiak, unpublished data.

<sup>a</sup> Saltery River weir was not operated from 2004 to 2007.

## Fishery Management and Objectives

Regulations for sockeye salmon sport fisheries in the KMA follow general regulations for other salmon species besides Chinook salmon. Due to elevated levels of angler effort and the potential for overexploitation of stocks, the bag and possession limits in Kodiak Road Zone waters are 2 fish over 20 inches in length whereas for all other locations, the limits are increased to 5. The only exception to the more restrictive bag limit for the Kodiak Road Zone is the Saltery Cove drainage, where the bag and possession limit is 5 sockeye salmon. The Saltery Cove sockeye salmon run is able to sustain this level of harvest due to relatively more difficult access as well as being the largest sockeye salmon run in the Kodiak Road Zone. A total of 10 sockeye salmon less than 20 inches in length may be harvested per day in all KMA waters.

With the exception of the 3 sockeye salmon stocks within the Kodiak Road Zone where harvest rates by anglers could deplete the abundance of fish needed for spawning, other populations within the KMA are lightly exploited by anglers so that sport harvests have negligible relevance to sustainability. In nearly all the Remote Zone sockeye salmon fisheries, the biological consequences of sport fishing removals cannot be measured, which simplifies management and minimizes the conservation burden borne by anglers. For stocks monitored through the use of weirs, inseason restrictions can be imposed whenever necessary, and conversely, bag limits can be liberalized to allow additional angling opportunity. Sockeye salmon sport fisheries occurring in KMA waters without inseason escapement monitoring are managed passively; the employment of relatively conservative catch limits coupled with low effort levels generally provides adequate measures for conserving individual stocks.



## **2015 and 2016 Sport Fisheries**

The combined 2015 Kodiak Road Zone sockeye salmon harvest of 11,044 fish was more than the recent 10-year average of 8,240 fish (Table 19). In 2014, Road Zone harvests climbed to 15,408 due entirely to a 3-fold increase of the Saltery River harvest over a 3-year span. Harvests of sockeye salmon in the Saltery River for 2015 were 7,035 fish, well above the 10-year average of 5,080 fish. Harvests of Buskin River sockeye salmon were 3,978 fish in 2015, which was also well above the recent 10-year average of 1,755. Release rates of sockeye salmon in 2015 by anglers were comparable for the Buskin and Saltery rivers, at about 3 fish released for every 2 harvested. The Pasagshak River was closed early in the season due to low returns and both harvest and release of Pasagshak River sockeye salmon was low (Table 19).

The 2015 guided angler harvest of 1,131 sockeye salmon at the Saltery River was near the 10-year average of 1,069 (Table 20). Saltery River sockeye salmon release to harvest ratios by guided anglers have been fairly consistent over time with less than 1 fish released for every fish harvested; the 2015 season was similar.

In 2016, the abundance of sockeye salmon was higher in the Buskin, Pasagshak, and Saltery rivers than in previous years. Both the Buskin and Saltery rivers had weir counts well above the BEGs (11,584 and 57,867 respectively; Table 21). The Pasagshak River had a slower return of sockeye salmon near the beginning of the run that warranted closure of the fishery; however, counts improved to the point where the fishery was reopened and the lower bound SEG of 3,000 sockeye salmon was achieved (7,053 fish).

## **OTHER FISHERIES**

Several streams on the southwest end of Kodiak Island that are also popular with sockeye salmon anglers include the Karluk and Ayakulik rivers and to a lesser extent the Uganik, Dog Salmon, and Olga rivers. Due to the remote locations and lack of access to these fly-in fisheries, most angler effort is guided. Fly-fishing is usually the preferred catch method. The numbers of sockeye salmon that are caught and subsequently released are higher in comparison to rates documented for Road Zone streams. This is probably a result of angler preferences and the inconvenience of processing large numbers of fish in the field.

Although annual SWHS sockeye salmon harvests from the Karluk and Ayakulik rivers have varied considerably since 2006, averages through 2015 respectively totaled 1,448 and 882 fish (Table 19). Harvest at the Karluk River in 2015 was 1,052 fish, slightly less than the 10-year average. Due to low SWHS response rates, annual estimates of sockeye salmon harvests for the Ayakulik River were unavailable in 2015. With few exceptions, the annual ratio of release to harvested fish in both fisheries is relatively high compared to the Kodiak road system, with an average of at least 2 fish released for each 1 retained. In some years as many as 5 fish were released for each harvested.

Since 2006, for both the Karluk and Ayakulik rivers, guided angler harvest statistics from the Freshwater Logbook Database have been available more consistently across years than SWHS estimates; this is true of other locations within the KRA as well. Of all the freshwaters of the KMA, only the Karluk and Saltery rivers have had guided harvests exceeding 1,000 fish, and only the Saltery River has had harvests this large in the past 5 years (Table 20). Although in many years, including 2015, strong sockeye salmon escapements have resulted in inseason liberalization of bag limits at the Karluk, Ayakulik, Saltery, and Dog Salmon rivers, increased

angler opportunity at these locations has not always appeared to have had a direct impact on harvest levels (Table 20).

As mentioned previously, compared to sport harvests, the typical escapements of sockeye salmon to the Karluk and Ayakulik rivers are very large, respectively averaging 166,068 (early run) and 260,690 from 2006 to 2015 (Table 21). Possibly as a result of ideal escapements during parental years, the 2015 Karluk River sockeye salmon escapement has been near the highest levels seen in the last decade. This circumstance triggered the liberalization of the sport fishery mentioned earlier to provide for increased angler opportunity. Ayakulik River sockeye salmon runs followed a similar trend to that of the Karluk River, with the 2015 escapement of 326,435 fish constituting one of the larger on record during the last decade and also warranting liberalized bag limits in the sport fishery. In 2016, sockeye salmon counts at the Karluk and Ayakulik rivers were within the BEGs; however, they did not warrant liberalization of the fisheries as in 2015. Final weir counts for 2016 for the Karluk River early run and Ayakulik River sockeye salmon runs was 164,760 and 254,967, respectively.

Sport fishing effort for sockeye salmon in the AP–AIRA is nominal in comparison to the KRA and typically accounts for less than 10% of the overall annual KMA catch. In 2015, the SWHS estimated a total harvest of 1,138 sockeye salmon, which is similar to the previous year’s harvest and close to the 10-year average harvest of 1,235 (Table 19). Similarly, harvest information for guided anglers obtained from the Freshwater Logbook Database for several AP–AIRA drainages, including the Sapsuk (Nelson), Ocean, and King Salmon–Bear rivers, which represent a large majority of overall effort in the AP–AIRA, did not show a departure from the most recent 10-year average. According to the logbooks, combined guided sport fishing harvests for the 3 streams is less than 500 fish on average (Table 20).

## **STEELHEAD–RAINBOW TROUT FISHERIES**

Most angling effort on wild rainbow trout (*Oncorhynchus mykiss*) populations within the KMA target steelhead, although several streams on Kodiak and Afognak islands support some targeted fishing for resident rainbow trout, and anglers that target other species annually produce incidental catches of resident rainbow trout in numerous streams. The Karluk and Ayakulik rivers are the most popular streams for anglers targeting steelhead, and most of the fishing effort occurs during the month of October through early November. Other KRA drainages supporting steelhead sport fisheries include the Uganik, Dog Salmon, Little, Afognak, Buskin, and Saltery rivers. ADF&G Freshwater Logbook Program records indicate that within the AP–AIRA, steelhead are targeted annually by small numbers of guided anglers fishing the Sandy, Sapsuk (Nelson), Cinder, and King Salmon river drainages.

Annual stock assessment of steelhead populations is currently limited to documenting kelts migrating out of drainages where weirs are otherwise used to monitor immigrating salmon. Steelhead research conducted previously on KMA stocks has included mark–recapture experiments to estimate single-year spawning abundance of Ayakulik and Little rivers populations (Kevin VanHatten, Fishery Biologist, Kodiak National Wildlife Refuge; personal communication), and a multiyear study of the Karluk River run in order to estimate total spawning population during any year using kelt age composition and abundance (Begich 1992).

Without more adequate knowledge of steelhead population dynamics, a current management strategy for the sport fishery relies on conservative regulations, which include year-round catch-and-release only fishing within the Kodiak Road Zone and the Sandy River drainage (located

within the AP–AIRA), and an annual harvest limit of 2 fish over 20 inches in all other KMA fresh waters. Where harvesting is allowed, the daily bag limit for steelhead is 2, only 1 of which may be longer than 20 inches. Historical harvest statistics available from logbooks and the SWHS indicate that anglers rarely retain steelhead in waters where it is permissible. Anecdotal information suggests that fly-fishing is the preferred method for catching steelhead in the KMA sport fishery.

Resident rainbow trout are periodically sought by anglers in just a few KMA locations, including the Buskin, Uganik, Saltery, and Afognak rivers. Most angler interest in resident populations within KRA waters is limited to those introduced through enhancement, which is discussed in a subsequent report section.

## KARLUK RIVER

The Karluk River steelhead sport fishery is probably better known to anglers than any other steelhead sport fishery within the KMA. The combined guided and unguided effort is extensive enough to be captured annually in SWHS statistics. Guided angler activity is also recorded in the ADF&G Freshwater Logbook Database. Most effort occurs near the Karluk River Portage, approximately 7 miles below Karluk Lake. SWHS estimates from 2006 through 2015 show anglers annually caught and between 274 and 2,196 Karluk River steelhead and averaged 1,049 fish over the last 10 years (Table 22). Estimated catch in 2015 was near the 10-year average, totaling 1,078 fish. Anglers reported harvesting very few steelhead during the same period, with SWHS annual totals from 2006 to 2015 only exceeding 100 fish in 2006 and 2009 and averaging just 36.

Table 22.–Statewide Harvest Survey estimates of freshwater steelhead harvest and catch for selected locations within the Kodiak Management Area, 2006–2015.

| Year      | Karluk River |                    | Ayakulik River |       | Total   |       |
|-----------|--------------|--------------------|----------------|-------|---------|-------|
|           | Harvest      | Catch <sup>a</sup> | Harvest        | Catch | Harvest | Catch |
| 2006      | 167          | 1,787              | 14             | 930   | 181     | 2,717 |
| 2007      | 9            | 968                | 0              | 886   | 9       | 1,854 |
| 2008      | 18           | 2,196              | 10             | 329   | 28      | 2,525 |
| 2009      | 107          | 859                | 0              | 190   | 107     | 1,049 |
| 2010      | 6            | 553                | 0              | 123   | 6       | 676   |
| 2011      | 6            | 1,556              | –              | –     | 6       | 1,556 |
| 2012      | 19           | 274                | –              | –     | 19      | 274   |
| 2013      | 8            | 496                | –              | –     | 8       | 496   |
| 2014      | 7            | 723                | 0              | 290   | 7       | 1,013 |
| 2015      | 15           | 1,078              | –              | –     | 15      | 1,005 |
| Average   |              |                    |                |       |         |       |
| 2006–2015 | 36           | 1,049              | 4              | 458   | 41      | 1,351 |

Source: Statewide Harvest Survey (SWHS) estimates (Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish [cited November 2016]. Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>).

Note: An en dash means insufficient survey responses to generate an estimate.

<sup>a</sup> Total number of fish caught; includes both harvest and release.

ADF&G Freshwater Logbook Program records show that guided anglers annually released between 248 and 740 Karluk River steelhead from 2006 through 2015, and averaged 504 (Table 23). Guided effort reflected in logbooks typically accounts for little of the annual total harvest by all anglers estimated by the SWHS and ranged between 2 and 10 fish per year.

Karluk River steelhead kelt counts since 2006 have fluctuated widely, ranging as high as 3,688 in 2011 and then falling to a low of 836 the next year (Table 24). In general, angler success (measured in terms of harvest and release) appeared to have no correlation to kelt abundance in a particular year. However, kelt counts can be highly unreliable as an index of a particular year's spawning population because timing of weir installation, high water events, and other unanticipated circumstances occasionally allow the unmonitored passage of fish.

Table 23.—Guided angler freshwater steelhead harvest and release within KMA, 2006–2015.

| Location         | Year |      |      |      |      |      |      |      |      |      | Average<br>2006–2015 |
|------------------|------|------|------|------|------|------|------|------|------|------|----------------------|
|                  | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |                      |
| Ayakulik River   |      |      |      |      |      |      |      |      |      |      |                      |
| Harvest          | 2    | 3    | 0    | 0    | 0    | 3    | 0    | 1    | 0    | 0    | 1                    |
| Release          | 550  | 828  | 357  | 135  | 65   | 118  | 54   | 64   | 39   | 74   | 228                  |
| Karluk River     |      |      |      |      |      |      |      |      |      |      |                      |
| Harvest          | 10   | 10   | 6    | 6    | 2    | 5    | 6    | 2    | 3    | 2    | 5                    |
| Release          | 540  | 369  | 342  | 702  | 665  | 447  | 503  | 248  | 485  | 740  | 504                  |
| Saltery River    |      |      |      |      |      |      |      |      |      |      |                      |
| Harvest          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0                    |
| Release          | 15   | 54   | 3    | 1    | 0    | 88   | 8    | 1    | 2    | 2    | 17                   |
| Alaska Peninsula |      |      |      |      |      |      |      |      |      |      |                      |
| Harvest          | 0    | 0    | 0    | 0    | 0    | 2    | 0    | 0    | 0    | 0    | 0                    |
| Release          | 336  | 425  | 490  | 181  | 0    | 77   | 0    | 0    | 217  | 270  | 200                  |

Source: Freshwater Logbook Database. (Alaska Department of Fish and Game, Division of Sport Fish, 2006 to present. Accessed September 3, 2016. [URL not publicly available as some information is confidential. Contact Research and Technical Services for data requests]).

Table 24.—Steelhead kelt counts through weirs on the Karluk and Ayakulik rivers, 2006–2016.

| Year                 | Karluk River | Ayakulik River |
|----------------------|--------------|----------------|
| 2006                 | 1,685        | 319            |
| 2007                 | 2,285        | 342            |
| 2008                 | 1,429        | 750            |
| 2009                 | 1,879        | 769            |
| 2010                 | 2,203        | 585            |
| 2011                 | 3,688        | 547            |
| 2012                 | 836          | 459            |
| 2013                 | 1,605        | 673            |
| 2014                 | 1,381        | 259            |
| 2015                 | 1,278        | 111            |
| Average<br>2006–2015 | 1,827        | 481            |
| 2016                 | 1,168        | 132            |

Source: Fuerst 2015; B. Fuerst, Fishery Biologist, ADF&G, Kodiak, unpublished data.

## **AYAKULIK RIVER**

Based on historical SWHS catch levels, the Ayakulik River steelhead fishery is similar to the Karluk River fishery in terms of its importance to anglers. Estimates of the number of steelhead caught annually from the SWHS are only available through 2010 and in 2014 due to low response rates and ranged between 123 and 930, with an annual average of 458 (Table 22). According to logbook records from 2006 to 2015, guided anglers harvested a total of just 9 fish over the 10 years (Table 23). Steelhead released by guided anglers during the same period ranged from a low of 39 in 2014 to a high of 828 in 2007 and averaged 228 from 2006 to 2015.

The number of emigrating steelhead kelt counted annually through the Ayakulik River weir since 2006 fluctuated between a high of 769 fish in 2009 and a low of just 111 in 2015, and averaged 481 fish from 2006 to 2015 (Table 24). Kelt counts fluctuate in a similar manner to the Karluk River and may be reflective of timing of the weir installation, high or low water conditions, and other unanticipated circumstances that could compromise effective counting of emigrating steelhead.

## **ENHANCED RAINBOW TROUT FISHERIES**

KMA rainbow trout stocking became widespread as early as 1953 and at times has extended as far geographically as Adak Island. Historically, the broodstock has come from steelhead from the Karluk River and rainbow trout from various locations in Alaska, as well as rainbow trout from hatcheries located in Montana and Washington. Prior to 2007, all stocked fish were reared at the former SF Fort Richardson hatchery facility in Anchorage and subsequently transported to Kodiak Island shortly before being released. Since then, fertilized eggs from the current Anchorage facility, the William J. Hernandez Sport Fish Hatchery (WJHSFH), have been transported to the KRAA's Pillar Creek Hatchery and the resultant rainbow trout fry have been reared locally. This practice has significantly increased survival rates.

All stocking is conducted in accordance with current guidelines set forth in the SF Statewide Stocking Plan for Recreational Fisheries<sup>7</sup> (SSP), which is a 5-year stocking document updated annually to reflect stocking needs based on funding, changes in land status, or other considerations. Annual hatchery production dictates the numbers of fish by species that are stocked into lakes each year. All enhanced landlocked lakes represent new sport fisheries because stocked species were not present before stocking occurred. A majority of the stocking is directed toward road-accessible lakes that offer alternative opportunity to angling for local wild salmon and Dolly Varden.

Since 2006, up to 20 Road Zone lakes have been stocked at a time with rainbow trout (Appendix G2). Yearly total hatchery production of rainbow trout has roughly varied between 32,000 and 102,000 fish due to occasional losses resulting from transport–release mortality and occasional surpluses of available fish.

All rainbow trout are stocked as fingerlings and, historically, fish have been released as small as 0.5 g, but currently the stocking range is 1–3 g. Releases occur within the egg-take brood year, typically in the month of August. Past age composition studies have shown that fingerlings released at less than 1 g reach catchable size (100 g) within 2–3 years after being released. Fish released at larger sizes may become available to anglers sooner.

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<sup>7</sup> Available at <http://www.adfg.alaska.gov/static/fishing/pdfs/hatcheries/15region2.pdf> (Accessed December 2015).

Current SSP objectives for nonanadromous hatchery releases along the Kodiak Road Zone include providing anglers at least 1,000 additional days of sport fishing effort annually. Anglers typically harvest Kodiak’s enhanced rainbow trout populations both on open water and through the ice. Estimates of total catch from the SWHS are unreliable due to relatively small numbers of respondents captured by the survey. However, anecdotal evidence suggests that most fishing effort is attributable to local residents who frequent the stocked lakes on a regular basis but consequently make up too small of an angler demographic to be adequately represented by SWHS sampling. Current Kodiak sport fishing regulations for enhanced rainbow trout allow a daily bag and possession limit of 10 fish, only 1 of which may exceed 20 inches in length. There is no annual limit.

## **OTHER FISHERIES**

Sport fishing effort for steelhead and rainbow trout elsewhere in the KMA is mostly limited to guided anglers. Unguided effort is minor and sporadic to the extent that SWHS estimates of catch and harvest are generally unavailable. Within AP–AIRA waters, the Sandy River and Sapsuk (Nelson) rivers receive the most effort of which nearly all is guided; for these rivers combined, between 0 and 490 fish were caught between 2006 and 2015 (Table 23). During this 10-year period, a total of 2 steelhead were harvested in these drainages. In the KRA, besides the Karluk and Ayakulik rivers, steelhead catches by guided anglers since 2006 were principally taken at the Dog Salmon, Saltery, and Little rivers, although during most years fewer than 100 steelhead were caught and released at any individual location, and few, if any fish were harvested.

## **GROUNDFISH FISHERIES**

### **HALIBUT**

#### **Fishery Description**

As with all other areas of the state, halibut (*Hippoglossus stenolepis*) is the groundfish species mostly commonly targeted by sport fishing anglers in KMA waters. The majority of angler effort occurs between late April and early September, and although halibut are harvested throughout the entire management area, a majority of the catch is taken from waters near the City of Kodiak in Chiniak, Marmot, and Ugak bays. Because of the popularity of this fishery and widespread angler effort, fairly reliable catch statistics for the KMA are available annually from the SWHS. In addition, ADF&G Saltwater Logbook Database records also fully document harvest and numbers released for halibut in the guided angler sector.

#### **Historical Catch**

Between 2006 and 2015, halibut catches estimated by the SWHS remained relatively stable throughout the KRA, with total numbers of fish harvested averaging 28,877 (Table 25). Harvest in 2015 was lower than average at 19,104 fish. Within Chiniak Bay, harvests estimated by the SWHS averaged 12,533 from 2006 to 2015, ranging from as high as 18,845 in 2007 to a low of 8,800 in 2015 (Table 25). Annual harvests from Chiniak Bay compose as much as 50% of the KMA total annually, although it is quite variable. Harvest of halibut in the KRA remains fairly stable with some inter-annual variation, though no specific trends have been observed. Like the KRA harvests, AP–AIRA halibut harvests also remained fairly stable over time, with the 2006–2015 harvest ranging from 778 to 3,719 and averaging 2,496 (Table 25).

Table 25.—Statewide Harvest Survey estimates of halibut and other groundfish harvest and catch for selected locations within the Kodiak Management Area, 2006–2015.

| Species         | Year    | Chiniak Bay |        | Total Kodiak<br>Regulatory Area |        | Alaska<br>Peninsula–<br>Aleutian Islands |       | Total Kodiak<br>Management Area |        |
|-----------------|---------|-------------|--------|---------------------------------|--------|--|-------|---------------------------------|--------|
|                 |         | Harvest     | Catch  | Harvest                         | Catch  | Harvest                                  | Catch | Harvest                         | Catch  |
| <b>Halibut</b>  |         |             |        |                                 |        |  |       |                                 |        |
|                 | 2006    | 11,541      | 18,206 | 25,219                          | 43,802 | 2,830                                    | 4,872 | 28,049                          | 48,674 |
|                 | 2007    | 18,845      | 28,230 | 35,337                          | 58,503 | 3,619                                    | 6,671 | 38,956                          | 65,174 |
|                 | 2008    | 18,145      | 29,775 | 33,999                          | 62,591 | 3,719                                    | 8,788 | 37,718                          | 71,379 |
|                 | 2009    | 16,865      | 26,705 | 31,590                          | 53,756 | 3,249                                    | 6,031 | 34,839                          | 59,787 |
|                 | 2010    | 10,669      | 16,484 | 23,063                          | 39,910 | 2,352                                    | 3,679 | 25,415                          | 43,589 |
|                 | 2011    | 9,814       | 16,859 | 21,156                          | 39,856 | 1,933                                    | 4,379 | 23,089                          | 44,235 |
|                 | 2012    | 10,000      | 16,298 | 23,145                          | 38,032 | 3,545                                    | 5,666 | 26,690                          | 43,698 |
|                 | 2013    | 9,227       | 15,007 | 26,591                          | 42,462 | 1,929                                    | 2,412 | 28,520                          | 44,874 |
|                 | 2014    | 11,424      | 15,186 | 25,386                          | 40,488 | 1,001                                    | 1,434 | 26,387                          | 41,922 |
|                 | 2015    | 8,800       | 11,589 | 18,326                          | 30,459 | 778                                      | 1,046 | 19,104                          | 31,505 |
|                 | Average | 12,533      | 19,434 | 26,381                          | 44,986 | 2,496                                    | 4,498 | 28,877                          | 49,484 |
| <b>Rockfish</b> |         |             |        |                                 |        |  |       |                                 |        |
|                 | 2006    | 5,040       | 11,781 | 11,688                          | 23,891 | 1,085                                    | 5,257 | 12,773                          | 29,148 |
|                 | 2007    | 7,845       | 18,399 | 12,551                          | 31,346 | 1,499                                    | 5,445 | 14,050                          | 36,791 |
|                 | 2008    | 9,635       | 21,674 | 15,596                          | 38,964 | 1,288                                    | 2,669 | 16,884                          | 41,633 |
|                 | 2009    | 10,538      | 22,494 | 15,937                          | 40,569 | 575                                      | 2,106 | 16,512                          | 42,675 |
|                 | 2010    | 12,310      | 27,222 | 19,897                          | 46,404 | 763                                      | 3,325 | 20,660                          | 49,729 |
|                 | 2011    | 9,083       | 20,951 | 15,539                          | 32,262 | 368                                      | 954   | 15,907                          | 33,216 |
|                 | 2012    | 8,372       | 15,752 | 18,511                          | 34,202 | 2,236                                    | 6,465 | 20,747                          | 40,667 |
|                 | 2013    | 8,229       | 14,697 | 19,861                          | 33,739 | 1,252                                    | 1,690 | 21,113                          | 35,429 |
|                 | 2014    | 18,570      | 25,355 | 29,733                          | 47,182 | 1,444                                    | 2,796 | 31,177                          | 49,978 |
|                 | 2015    | 15,334      | 23,669 | 25,786                          | 40,974 | 2,086                                    | 6,457 | 27,872                          | 47,431 |
|                 | Average | 10,496      | 20,199 | 18,510                          | 36,953 | 1,260                                    | 3,716 | 19,770                          | 40,670 |
| <b>Lingcod</b>  |         |             |        |                                 |        |  |       |                                 |        |
|                 | 2006    | 834         | 1,148  | 2,447                           | 3,915  | 35                                       | 197   | 2,482                           | 4,112  |
|                 | 2007    | 1,557       | 2,257  | 3,203                           | 5,548  | 857                                      | 949   | 4,060                           | 6,497  |
|                 | 2008    | 1,748       | 2,516  | 3,518                           | 6,201  | 147                                      | 455   | 3,665                           | 6,656  |
|                 | 2009    | 1,660       | 2,520  | 3,736                           | 6,812  | 242                                      | 1,085 | 3,978                           | 7,897  |
|                 | 2010    | 2,419       | 3,777  | 3,966                           | 6,274  | 47                                       | 95    | 4,013                           | 6,369  |
|                 | 2011    | 2,445       | 3,509  | 4,233                           | 7,087  | 15                                       | 167   | 4,248                           | 7,254  |
|                 | 2012    | 1,519       | 2,246  | 3,969                           | 6,118  | 136                                      | 205   | 4,105                           | 6,323  |
|                 | 2013    | 1,416       | 2,201  | 4,344                           | 6,137  | 199                                      | 216   | 4,543                           | 6,353  |
|                 | 2014    | 2,270       | 2,681  | 4,434                           | 6,600  | 588                                      | 893   | 5,022                           | 7,493  |
|                 | 2015    | 1,611       | 2,844  | 2,945                           | 5,493  | 120                                      | 551   | 3,065                           | 6,044  |
|                 | Average | 1,748       | 2,570  | 3,680                           | 6,019  | 239                                      | 481   | 3,918                           | 6,500  |

Source: Statewide Harvest Survey (SWHS) estimates (Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish [cited November 2016]. Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>).

Since 2006, Chiniak Bay guided harvests have averaged 3,715 and have ranged from 2,135 to 5,446 (Table 26). Guided angler halibut harvests decreased steadily in Chiniak Bay and also within the KMA overall, to the extent that 9,399 halibut were reported for the entire management area in 2015, which is less than half of the reported harvest in 2006. Of these, 2,135 fish were taken from waters of Chiniak Bay, which is about half of the reported harvest in 2006. Total KRA halibut harvests also declined during the same period, dropping to 9,218 in 2015 from a peak of 20,343 fish reported in 2007. These changes are probably due to changes in federal regulations managing halibut that have restricted both the number of fish guided anglers can harvest as well as the number of boats participating in the fishery. There may also be a shift towards harvest of other species in the guided fishery, such as rockfish (*Sebastes* spp.) and Pacific cod (*Gadus microcephalus*). Increased angler interest in rockfish and Pacific cod have been reported by many charter boat operators to the extent that anglers may forgo harvest opportunity for halibut in exchange for other groundfish species.

Table 26.—Guided angler logbook records of halibut and other groundfish catch for selected locations within the Kodiak Management Area, 2006–2015.

| Location               | Year    | Halibut |         | Rockfish |         | Lingcod |         |
|------------------------|---------|---------|---------|----------|---------|---------|---------|
|                        |         | Harvest | Release | Harvest  | Release | Harvest | Release |
| Chiniak Bay            |         |         |         |          |         |         |         |
|                        | 2006    | 4,741   | 2,479   | 2,565    | 936     | 321     | 96      |
|                        | 2007    | 5,144   | 4,271   | 3,825    | 1,406   | 396     | 65      |
|                        | 2008    | 5,446   | 4,615   | 5,018    | 1,166   | 618     | 176     |
|                        | 2009    | 3,773   | 3,943   | 5,099    | 1,115   | 361     | 131     |
|                        | 2010    | 3,810   | 2,143   | 5,123    | 716     | 801     | 112     |
|                        | 2011    | 4,799   | 3,334   | 5,103    | 756     | 602     | 32      |
|                        | 2012    | 2,305   | 1,400   | 2,910    | 512     | 232     | 31      |
|                        | 2013    | 2,542   | 911     | 4,633    | 385     | 334     | 22      |
|                        | 2014    | 2,453   | 638     | 6,025    | 459     | 279     | 17      |
|                        | 2015    | 2,135   | 702     | 7,076    | 521     | 266     | 19      |
|                        | Average | 3,715   | 2,444   | 4,738    | 797     | 421     | 70      |
| Afognak–Shuyak Islands |         |         |         |          |         |         |         |
|                        | 2006    | 2,626   | 3,798   | 1,108    | 842     | 644     | 178     |
|                        | 2007    | 3,636   | 4,641   | 751      | 2,833   | 1,172   | 465     |
|                        | 2008    | 3,402   | 4,342   | 2,165    | 1,456   | 1,309   | 556     |
|                        | 2009    | 3,119   | 4,192   | 2,069    | 1,564   | 1,073   | 411     |
|                        | 2010    | 3,458   | 3,748   | 3,189    | 1,403   | 1,070   | 386     |
|                        | 2011    | 3,402   | 3,686   | 1,924    | 2,417   | 909     | 205     |
|                        | 2012    | 2,531   | 2,065   | 2,556    | 1,340   | 1,178   | 328     |
|                        | 2013    | 2,252   | 2,324   | 2,436    | 1,722   | 992     | 411     |
|                        | 2014    | 2,045   | 2,768   | 2,006    | 2,290   | 964     | 213     |
|                        | 2015    | 1,978   | 1,384   | 2,244    | 1,524   | 776     | 383     |
|                        | Average | 2,845   | 3,295   | 3,858    | 1,739   | 1,009   | 354     |

-continued-



Table 26.–Page 2 of 2.

| Location  | Year    | Halibut |         | Rockfish |         | Lingcod |         |
|---|---------|---------|---------|----------|---------|---------|---------|
|   |         | Harvest | Release | Harvest  | Release | Harvest | Release |
| Total Kodiak Regulatory Area                      |         |         |         |          |         |         |         |
|   | 2006    | 19,842  | 20,740  | 6,222    | 3,733   | 1,363   | 433     |
|   | 2007    | 20,343  | 20,823  | 12,035   | 8,018   | 2,165   | 672     |
|   | 2008    | 18,441  | 21,344  | 11,531   | 5,133   | 2,606   | 1,046   |
|   | 2009    | 14,477  | 19,430  | 13,488   | 4,542   | 2,031   | 758     |
|   | 2010    | 14,669  | 15,344  | 11,361   | 4,276   | 2,571   | 731     |
|   | 2011    | 16,058  | 18,558  | 12,286   | 4,747   | 2,327   | 544     |
|   | 2012    | 14,889  | 13,866  | 13,981   | 3,542   | 2,458   | 498     |
|   | 2013    | 13,764  | 11,341  | 16,195   | 4,133   | 2,256   | 597     |
|   | 2014    | 12,912  | 9,558   | 18,917   | 5,444   | 1,800   | 327     |
|   | 2015    | 9,218   | 4,779   | 22,319   | 4,137   | 1,437   | 476     |
|   | Average | 15,461  | 15,578  | 13,834   | 4,771   | 2,101   | 608     |
| Alaska Peninsula–Aleutian Islands Regulatory Area |         |         |         |          |         |         |         |
|   | 2006    | 685     | 925     | 91       | 393     | 0       | 2       |
|   | 2007    | 935     | 1,350   | 211      | 553     | 7       | 5       |
|   | 2008    | 922     | 1,336   | 148      | 469     | 24      | 42      |
|   | 2009    | 766     | 858     | 45       | 162     | 7       | 8       |
|   | 2010    | 877     | 835     | 170      | 80      | 26      | 1       |
|   | 2011    | 506     | 547     | 164      | 73      | 32      | 23      |
|   | 2012    | 691     | 838     | 134      | 155     | 7       | 13      |
|   | 2013    | 634     | 557     | 73       | 99      | 18      | 3       |
|   | 2014    | 176     | 143     | 106      | 197     | 4       | 7       |
|   | 2015    | 181     | 153     | 73       | 86      | 12      | 0       |
|   | Average | 637     | 754     | 122      | 227     | 14      | 10      |
| Total Kodiak Management Area                      |         |         |         |          |         |         |         |
|   | 2006    | 20,527  | 21,665  | 6,313    | 4,126   | 1,363   | 435     |
|   | 2007    | 21,278  | 22,173  | 12,246   | 8,571   | 2,172   | 677     |
|   | 2008    | 19,363  | 22,680  | 11,679   | 5,602   | 2,630   | 1,088   |
|   | 2009    | 15,243  | 20,288  | 13,533   | 4,704   | 2,038   | 766     |
|   | 2010    | 15,546  | 16,179  | 11,531   | 4,356   | 2,597   | 732     |
|   | 2011    | 16,564  | 19,105  | 12,450   | 4,820   | 2,359   | 567     |
|   | 2012    | 15,580  | 14,704  | 14,115   | 3,697   | 2,465   | 511     |
|   | 2013    | 14,398  | 11,898  | 16,268   | 14,398  | 2,274   | 600     |
|   | 2014    | 13,088  | 9,701   | 19,023   | 5,641   | 1,804   | 334     |
|   | 2015    | 9,399   | 4,932   | 22,392   | 4,223   | 1,449   | 476     |
|   | Average | 16,099  | 16,333  | 13,955   | 5,004   | 2,115   | 619     |

Source: Saltwater Logbook Database. (Alaska Department of Fish and Game, Division of Sport Fish. 2006 to present. Accessed September 3, 2016. [URL not publicly available as some information is confidential. Contact Research and Technical Services for data requests]).

## Fishery Management and Objectives

Halibut stocks throughout Alaska are managed by the federal government through an international treaty with Canada. Direct regulatory authority rests with the International Pacific

Halibut Commission and by delegation from the commission to the North Pacific Fishery Management Council. All regulations adopted for the halibut sport fishery by the State of Alaska must reflect those previously established in federal law.

KMA waters fall within 2 of 4 federal management areas which constitute the geographic basis for establishment of regulations. Most of the KRA is included as part of federal Subarea 3A, whereas the AP–AIRA is divided between 3 subareas: 3B, 4A, and 4B. Within these subareas, sport fishing regulations for unguided anglers include a daily bag limit of 2 halibut and a possession limit of 4. Although there are no individual or collective annual harvest limits for unguided anglers, the guided sector of the halibut sport fishery in Subarea 3A is subject to an annual guideline harvest level. Additionally, a limited entry program for Subarea 3A halibut guides became effective in 2011.

### **2015 Sport Fishery**

The SWHS has recorded a 10-year trend of relatively stable halibut harvests from 2006 through 2015, although the estimated KMA total harvest of 19,104 fish in 2015 was lower than the 10-year average 28,877 (Table 25). The total catch of 31,505 in 2015 for the KMA was much lower than the 2006–2015 average but the number of released fish appears more variable between years compared to harvests.

Saltwater Logbook Database records of the 2015 halibut catch reflected a declining trend in harvests in the KMA in most areas, except for the Afognak–Shuyak Islands area, although the 2015 harvest of 1,978 in this area was less than several previous years (Table 26). In 2015, the total KRA guided angler halibut harvest of 9,218 reflected a decrease of almost 4,000 fish from the year before, and represents only about half of the harvest from 10 years ago.

## **ROCKFISH**

### **Fishery Description**

Both pelagic and nonpelagic rockfishes (*Sebastes* spp.) are harvested in KMA waters. Catches of pelagic species consist primarily of black (*S. melanops*) and dusky (*S. ciliates*) rockfish, whereas nonpelagic catches consist mainly of yelloweye rockfish (*S. ruberrimus*). Pelagic species historically have constituted most of the rockfish catch. Although a portion of annual rockfish catches are taken incidentally by anglers targeting halibut and salmon, there is also directed effort for these species, especially pelagic rockfishes.

Current KMA sport fishing regulations for harvesting rockfish are split between the 2 regulatory areas, with those in the KRA consisting of a daily bag limit of 5 and a possession limit of 10, only 2 per day and 4 in possession may be nonpelagic species and only 1 per day or 2 in possession may be a yelloweye rockfish. In AP–AIRA waters, the combined species bag limit is 10 fish and the possession limit is 20. There are no size or annual limits established for either regulatory area, and no annual harvest reporting requirements.

### **Historical Catch**

Throughout the KMA, annual SWHS estimates of rockfish sport catches since 2001 have followed a strong upward trend, although the increases have been disparate within the KRA and the AP–AIRA due to more overall catch in the former area and more releases of caught fish in the latter area. Total estimates of KMA rockfish harvests have almost doubled in magnitude since 2006, reaching a high of 31,177 fish in 2014 (Table 25). Within KRA waters during the

same period, rockfish harvests also doubled and on average composed about 91% of the KMA total harvest. In Chiniak Bay, rockfish harvests increased from 5,040 in 2006 to a high of 18,570 during the 2014 fishery.

Except for Chiniak Bay, catch trends for guided anglers fishing the KRA waters since 2006 as reflected by ADF&G Saltwater Logbook Database records, were consistent with SWHS estimates during the same period. Harvests increased from 6,222 in 2006 to 22,319 in 2015 (Table 26). Within Chiniak Bay, the guided angler harvest during the same period has remained relatively stable with a 10-year average harvest of 4,738 fish. Rockfish catches in the AP–AIRA remained a small percentage of the KMA total, annually totaling less than 200 fish in 8 of the preceding 10 years.

## **Fishery Management and Objectives**

There are no specific fishery management objectives for rockfish in the KMA at this time and there have been no formalized stock assessments completed to date. ADF&G Division of Commercial Fisheries (CF) is currently working on creating a population assessment for KRA rockfish that could be used to aid in management of the species. To date, however, because rockfish are generally long-lived and reproduce slowly, a conservative management approach has been implemented. In 2011, the Alaska Board of Fisheries (BOF) reduced the bag limit for KRA rockfish to the current regulations consisting of a daily bag limit of 5 and a possession limit of 10, of which only 2 per day and 4 in possession may be nonpelagic species and only 1 per day or 2 in possession may be a yelloweye rockfish. The goal of these regulations was to restrain growth in the fishery in response to the rapidly increasing harvest that had been observed from 2001 to 2010 (Figure 10). From 2011 through 2015, the harvest of KRA rockfish has nearly doubled and in response, ADF&G has submitted a proposal to the BOF to reduce the bag limit of pelagic rockfish to 3 per day, 6 in possession within Chiniak and Marmot Bays. This proposal will be deliberated at the 2017 Kodiak BOF meeting with the aim to place further limits on growth of the sport fishery.

Concerns over the growth of the sport fishery stem partially from the limited information about fishery harvest rates relative to population sizes in KRA waters. Long-lived and slow-reproducing species can be prone to overharvest and it may take more than 30 years to replace missing age classes. Further concerns stem from localized depletion and overharvest seen currently in U.S. westcoast rockfish populations. Until a finalized stock assessment is realized and harvests can be compared to population sizes, a conservative management approach is warranted with harvests limited to rates that have been shown to be sustainable.

## **2015 Sport Fishery**

In 2015, the KMA rockfish harvest of 27,872 was less than the record high harvest of 31,177 in 2014, but was still well above the recent 10-year average of 19,770 (Table 25). In 2015, the Chiniak Bay harvest also decreased to 15,334 fish compared to the record high of 18,570 (Table 25). The estimated average harvest of rockfish in Chiniak Bay from 2006 to 2015 was 10,496. The 2015 KMA guided angler harvest of rockfish was 22,392 and was similar to 2014, though it was well above the recent 10-year average of 13,955 (Table 26). The guided angler harvest represented about 75% of the total rockfish harvest in the KMA in 2015 (Table 27). In Chiniak Bay, the 2015 guided angler harvest of rockfish was 7,076 and was above the 2006 to 2015 average of 4,738. The guided angler harvest represented about 46% of the total rockfish harvest in Chiniak Bay in 2015.

## Rockfish Harvest

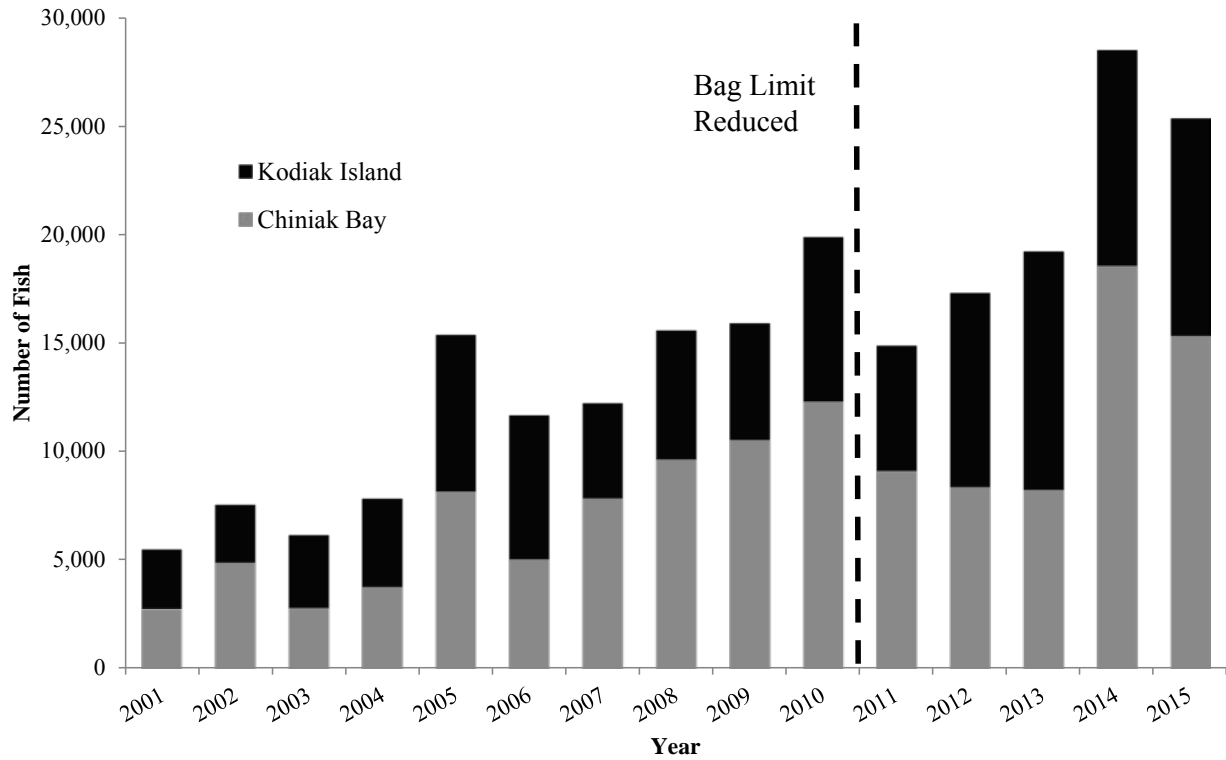


Figure 10.—Harvest of rockfish in Chiniak Bay and the remainder of the Kodiak Regulatory Area, 2001–2015.

*Source:* Statewide Harvest Survey (SWHS) estimates (Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish [cited November 2016]. Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>).

Table 27.—Harvest of rockfish from guided logbooks and SWHS in Chiniak Bay and the Kodiak Regulatory Area 2006–2015.

| Year      | Chiniak Bay |               |          | Kodiak Regulatory Area |               |          |
|-----------|-------------|---------------|----------|------------------------|---------------|----------|
|           | Guided      | SWHS estimate | % Guided | Guided                 | SWHS Estimate | % Guided |
| 2006      | 2,565       | 5,040         | 51       | 6,222                  | 11,688        | 53       |
| 2007      | 3,825       | 7,845         | 49       | 12,035                 | 12,551        | 96       |
| 2008      | 5,018       | 9,653         | 52       | 11,531                 | 15,596        | 74       |
| 2009      | 5,099       | 10,538        | 48       | 13,488                 | 15,937        | 85       |
| 2010      | 5,123       | 12,310        | 42       | 11,361                 | 19,897        | 57       |
| 2011      | 5,103       | 9,083         | 56       | 12,286                 | 15,539        | 79       |
| 2012      | 2,910       | 8,372         | 35       | 13,981                 | 18,511        | 76       |
| 2013      | 4,633       | 8,229         | 56       | 16,195                 | 19,861        | 82       |
| 2014      | 6,025       | 18,570        | 32       | 18,917                 | 29,733        | 64       |
| 2015      | 7,076       | 15,334        | 46       | 22,319                 | 25,786        | 87       |
| Average   |             |               |          |                        |               |          |
| 2006–2015 | 4,738       | 10,497        | 47       | 13,834                 | 18,510        | 75       |
| 2011–2015 | 5,149       | 11,918        | 45       | 16,740                 | 21,886        | 77       |

Source: Statewide Harvest Survey (SWHS) estimates (Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish [cited November 2016]. Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>); Saltwater Logbook Database. (Alaska Department of Fish and Game, Division of Sport Fish. 2006 to present. Accessed September 3, 2016. [URL not publicly available as some information is confidential. Contact Research and Technical Services for data requests]).

## OTHER GROUND FISH

In addition to halibut and rockfish, the other groundfish species primarily targeted in the KMA sport fisheries is lingcod (*Ophiodon elongates*). Although a portion of annual lingcod catches are taken incidentally by anglers targeting halibut and salmon, there is also some directed effort for lingcod.

Lingcod catches in KMA waters historically have remained much lower than those of other groundfish species, averaging 3,918 fish per year between 2006 and 2015 by SWHS estimates (Table 25). However, similar to a recent 10-year trend in the rockfish fishery, SWHS estimates of lingcod catches increased steadily beginning in 2005, and catch in 2014 was a 10-year peak at 5,022. The 2015 harvest of lingcod decreased to 3,065 fish. The ratio of harvest to release was roughly 1:1 in the 10-year average catch and varied little during any individual year through 2015.

Logbook records of lingcod catches since 2005 showed higher retention rates (harvest per catch) than the SWHS estimates. In general, guided anglers retained between 2 and 3 lingcod for each 1 released, but harvest rates have remained similar from 2006 to 2015 with a 10-year average harvest of 2,115 fish (Table 26). The 2015 harvest was below the recent 10-year average and was 1,449 fish.

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**APPENDIX A: RECENT BOARD OF FISHERIES  
REGULATORY ACTIONS FOR THE KODIAK  
MANAGEMENT AREA**

**2014 Kodiak Regulatory Area Board of Fisheries:**

No regulatory changes were made at this meeting for Kodiak Regulatory Area sport fisheries.

**2016 Alaska Peninsula–Aleutian Islands Regulatory Area Board of Fisheries:**

- 1) 5AAC 65.020—Bag limits, possession limits, annual limits, and size limits for Alaska Peninsula and Aleutian Islands Area; and 5 AAC 65.022—Special provisions for methods and means in the Alaska Peninsula and Aleutian Islands Area.

The BOF established a single-hook, no-bait sport fishery for Chinook salmon in the Sandy River drainage with a bag and possession limit of 1 fish per day over 20 inches.

- 2) 5AAC 65.020—Bag limits, possession limits, annual limits, and size limits Alaska Peninsula and Aleutian Island Area.

The BOF increased the freshwater possession limit for salmon, other than Chinook salmon, over 20 inches in length to 10 fish per day and established a bag and possession limit for salmon, other than Chinook salmon, under 20 inches in length of 10 fish.

- 3) 5AAC 65.051—Waters closed to sport fishing in the Alaska Peninsula and Aleutian Islands Area.

The BOF amended the closed waters in Swanson lagoon to a seasonal closure from January 1 through July 31 and implemented a year-round closure for sport fishing for sockeye salmon.

- 4) 5AAC 65.020—Bag limits, possession limits, annual limits, and size limits Alaska Peninsula and Aleutian Island Area.

The BOF reduced the possession limit for Illiuliuk Creek coho salmon from 4 to 2 to bring the limits in line with the remainder of Unalaska Bay.



**APPENDIX B: CURRENT FISHERY MANAGEMENT  
PLANS OF THE KODIAK MANAGEMENT AREA**

**5 AAC 64.060.** *Kodiak Area Salt Water King<sup>8</sup> Salmon Sport Fishery Management Plan.*

- (a) The purpose of the management plan under this section is to meet the Board of Fisheries' goal of stabilizing the sport harvest of king salmon in the salt waters of the Kodiak Area.
- (b) In the Kodiak Area salt water king salmon sport fishery,
- (1) the guideline harvest level is 11,000 king salmon;
  - (2) the sport harvest will be estimated annually by the department's statewide harvest survey;
  - (3) king salmon taken in Monashka Bay will not count towards the guideline harvest level established in (1) of this subsection;
  - (4) the bag and possession limit for king salmon is two fish, with no size limit;
  - (5) the annual limit and harvest record specified in 5 AAC 64.022 and 5 AAC 64.025 do not apply.
- (c) If the guideline harvest level is exceeded, the board will consider restrictions that may be necessary to avoid exceeding the guideline harvest level at a regularly scheduled meeting for the Kodiak Area. If the board finds that restrictions are necessary, the board will adopt one or more of the following restrictions in the following order:
- (1) reduce the nonresident bag and possession limit for king salmon in salt waters to one fish;
  - (2) prohibit a sport fishing guide from taking a king salmon while a client is present or is within the guide's control or responsibility;
  - (3) allow only king salmon 28 inches or greater in length to be retained;
  - (4) reduce the resident bag and possession limit for king salmon in salt waters to one fish.

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<sup>8</sup> In the regulatory language, Chinook salmon are called "king" salmon, "the board" refers to the Alaska Board of Fisheries, and "the department" refers to the Alaska Department of Fish and Game.

**APPENDIX C: EMERGENCY ORDERS ISSUED IN 2014–  
2016 FOR KODIAK MANAGEMENT AREA FISHERIES**

**2014 Emergency Orders:**

- 1) EO 2-KS-4-11-14 prohibited the filleting, mutilating, and removing of heads of Chinook salmon at sea by marine boat anglers returning to Kodiak road system ports from 31 May to 31 August.
- 2) EO 2-KS-4-12-14 reduced the bag and possession limit of Chinook salmon in the Ayakulik Drainage to 1 fish per day with a 2 fish annual limit, effective 1 June–25 July.
- 3) EO 2-KS-4-14-14 prohibited the retention of Chinook salmon and prohibited the use of bait for all sport fishing in the Karluk Drainage below Karluk Lake, effective 1 June–25 July.
- 4) EO 2-KS-4-22-14 closed the Karluk River to retention of Chinook salmon and prohibited the use of bait for all sport fishing in the Karluk Drainage below Karluk Lake, effective 21 June–25 July.
- 5) EO 2-KS-4-23-14 closed the Ayakulik River to retention of Chinook salmon and prohibited the use of bait for all sport fishing in the Ayakulik Drainage, effective 21 June–25 July.
- 6) EO 2-KS-4-13-14 reduced the bag and possession limit of Chinook salmon in the Chignik Drainage to 1 fish per day with a 2 fish annual limit, effective 1 June–9 August.
- 7) EO 2-KS-4-38-14 restored the bag and possession limit of Chinook salmon in the Chignik Drainage to 2 fish per day with a 5 fish annual limit, effective 12 July–9 August.
- 8) EO 2-RS-4-15-14 increased the Afognak River drainage sockeye salmon daily bag limit from 5 to 10 fish, effective 6 June–31 December.
- 9) EO 2-RS-4-17-14 increased the Buskin River drainage sockeye salmon daily bag and possession limit from 2 to 5 fish, effective 12 June–31 December.
- 10) EO 2-RS-4-18-14 increased the Ayakulik River drainage sockeye salmon daily bag limit from 5 to 10 fish, effective 12 June–31 December.
- 11) EO 2-RS-4-19-14 increased the Karluk River drainage sockeye salmon daily bag limit from 5 to 10 fish, effective 13 June–31 December.
- 12) EO 2-RS-4-29-14 increased the Dog Salmon River drainage sockeye salmon daily bag limit from 5 to 10 fish, effective 27 June–31 December.
- 13) EO 2-RS-4-39-15 closed the Pasagshak River drainage to sport fishing for sockeye salmon, effective 18 July–31 December.

**2015 Emergency Orders:**

- 1) EO 2-KS-4-13-15 closed the Ayakulik River to retention of Chinook salmon and prohibited the use of bait for all sport fishing in the Ayakulik Drainage, effective 1 June–25 July.
- 2) EO 2-KS-4-14-15 closed the Karluk River to retention of Chinook salmon and prohibited the use of bait for all sport fishing in the Karluk Drainage below Karluk Lake, effective 1 June–25 July.

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**2015 Emergency Orders (continued):**

- 3) EO 2-KS-4-15-15 prohibited the filleting, mutilating, and deheading of Chinook salmon at sea by marine boat anglers returning to Kodiak road system ports from 31 May to 31 August.
- 4) EO 2-KS-4-31-15 closed the Monashka Creek drainage and all saltwaters of Monashka Bay inside a line from Miller Point to Termination Point to sport fishing for Chinook salmon. In Monashka Creek, only 1, unbaited single hook was to be used, effective 25 June–1 August.
- 5) EO 2-RS-4-18-15 increased the Buskin River drainage sockeye salmon daily bag and possession limit from 2 to 5 fish, effective 12 June–31 December.
- 6) EO 2-RS-4-22-15 increased the Afognak River drainage sockeye salmon daily bag limit from 5 to 10 fish, effective 16 June–31 December.
- 7) EO 2-RS-4-23-15 increased the Karluk River drainage sockeye salmon daily bag limit from 5 to 10 fish, effective 16 June–31 December.
- 8) EO 2-RS-4-30-15 increased the Dog Salmon River drainage sockeye salmon daily bag limit from 5 to 10 fish, effective 23 June–31 December.
- 9) EO 2-RS-4-42-15 closed the Pasagshak River drainage to sport fishing for sockeye salmon, effective 3 July–31 December.
- 10) EO 2-RS-4-44-15 increased the bag and possession limit for sockeye salmon in the Saltery Creek drainage from 5 to 10 fish, effective 23 July–31 December.

**2016 Emergency Orders:**

- 1) EO 2-KS-4-9-16 closed the Ayakulik River to retention of Chinook salmon and prohibited the use of bait for all sport fishing in the Ayakulik Drainage, effective 1 June–25 July.
- 2) EO 2-KS-4-10-10 closed the Karluk River to retention of Chinook salmon and prohibited the use of bait for all sport fishing in the Karluk Drainage below Karluk Lake, effective 1 June–25 July.
- 3) EO 2-KS-4-11-16 prohibited the filleting, mutilating, and deheading of Chinook salmon at sea by marine boat anglers returning to Kodiak road system ports from 31 May to 31 August.
- 4) EO 2-KS-4-12-16 closed the Monashka Creek drainage and all saltwaters of Monashka Bay inside a line from Miller Point to Termination Point to sport fishing for Chinook salmon. In Monashka Creek, only 1, unbaited single hook was to be used, effective 1 June–1 August.
- 5) EO 2-KS-4-32-16 opened fishing for Chinook salmon in the Ayakulik River drainage but prohibits retention of Chinook salmon and the use of bait for all sport fishing in the Ayakulik Drainage, effective 6 July–25 July.
- 6) EO 2-RS-4-16-16 increased the Afognak River drainage sockeye salmon daily bag limit from 5 to 10 fish, effective 4 June–31 December.
- 7) EO 2-RS-4-17-15 increased the Buskin River drainage sockeye salmon daily bag and possession limit from 2 to 5 fish, effective 9 June–31 December.

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**2016 Emergency Orders (continued):**

- 8) EO 2-RS-4-27-16 closed the Pasagshak River drainage to sport fishing for sockeye salmon, effective 2 July–31 December.
- 9) EO 2-RS-4-30-16 increased the bag and possession limit for sockeye salmon in the Saltery Creek drainage from 5 to 10 fish, effective 6 July–31 December.
- 10) EO 2-RS-4-34-16 reopened the Pasagshak River drainage to sport fishing for sockeye salmon, effective 2 July–31 December.
- 11) EO 2-SS-4-41-16 closed the Buskin River drainage to sport fishing for coho salmon, effective 16 September–31 December.

**APPENDIX D: SELECTED 2006–2016 KODIAK  
MANAGEMENT AREA DAILY WEIR COUNTS**

Appendix D1.–Karluk River Chinook salmon daily cumulative weir counts, 2006–2016.

| Date   | Year  |       |      |      |       |       |       |       |      |       | Average | 2016  |       |
|--------|-------|-------|------|------|-------|-------|-------|-------|------|-------|---------|-------|-------|
|        | 2006  | 2007  | 2008 | 2009 | 2010  | 2011  | 2012  | 2013  | 2014 | 2015  |         |       |       |
| 21 May | 1     | 0     | 0    | 0    | 0     | 0     | 0     | 0     | 0    | 0     | 0       | 0     | 0     |
| 22 May | 1     | 0     | 0    | 0    | 0     | 0     | 0     | 0     | 0    | 0     | 0       | 0     | 0     |
| 23 May | 5     | 0     | 0    | 0    | 0     | 1     | 0     | 0     | 0    | 0     | 1       | 0     | 0     |
| 24 May | 17    | 1     | 0    | 0    | 0     | 1     | 0     | 8     | 0    | 0     | 3       | 1     | 1     |
| 25 May | 28    | 3     | 1    | 0    | 0     | 4     | 0     | 30    | 0    | 0     | 7       | 7     | 7     |
| 26 May | 54    | 5     | 2    | 3    | 5     | 7     | 0     | 55    | 5    | 0     | 14      | 12    | 12    |
| 27 May | 73    | 8     | 2    | 4    | 6     | 9     | 8     | 60    | 6    | 1     | 18      | 17    | 17    |
| 28 May | 82    | 18    | 2    | 5    | 12    | 30    | 15    | 60    | 7    | 9     | 24      | 23    | 23    |
| 29 May | 113   | 32    | 2    | 6    | 20    | 34    | 15    | 66    | 23   | 11    | 32      | 37    | 37    |
| 30 May | 113   | 37    | 2    | 9    | 23    | 52    | 24    | 72    | 25   | 14    | 37      | 51    | 51    |
| 31 May | 113   | 38    | 8    | 13   | 25    | 57    | 29    | 118   | 41   | 20    | 46      | 80    | 80    |
| 1 Jun  | 197   | 42    | 10   | 22   | 44    | 84    | 30    | 129   | 50   | 37    | 65      | 82    | 82    |
| 2 Jun  | 222   | 64    | 10   | 23   | 55    | 139   | 49    | 207   | 61   | 58    | 89      | 93    | 93    |
| 3 Jun  | 277   | 75    | 10   | 33   | 88    | 156   | 98    | 210   | 66   | 92    | 111     | 131   | 131   |
| 4 Jun  | 344   | 112   | 10   | 45   | 135   | 172   | 106   | 305   | 87   | 115   | 143     | 134   | 134   |
| 5 Jun  | 382   | 118   | 13   | 52   | 150   | 211   | 120   | 463   | 106  | 127   | 174     | 200   | 200   |
| 6 Jun  | 436   | 132   | 14   | 58   | 196   | 243   | 163   | 521   | 113  | 132   | 201     | 315   | 315   |
| 7 Jun  | 516   | 145   | 14   | 113  | 246   | 298   | 164   | 588   | 121  | 155   | 236     | 464   | 464   |
| 8 Jun  | 521   | 156   | 29   | 134  | 264   | 311   | 198   | 604   | 131  | 174   | 252     | 484   | 484   |
| 9 Jun  | 849   | 300   | 38   | 174  | 302   | 328   | 220   | 632   | 142  | 248   | 323     | 518   | 518   |
| 10 Jun | 984   | 427   | 42   | 192  | 337   | 351   | 285   | 689   | 160  | 281   | 375     | 542   | 542   |
| 11 Jun | 1,202 | 493   | 53   | 250  | 392   | 411   | 304   | 764   | 170  | 299   | 434     | 564   | 564   |
| 12 Jun | 1,385 | 514   | 63   | 318  | 424   | 517   | 370   | 798   | 195  | 388   | 497     | 752   | 752   |
| 13 Jun | 1,522 | 576   | 68   | 377  | 526   | 658   | 627   | 867   | 212  | 480   | 591     | 857   | 857   |
| 14 Jun | 1,540 | 643   | 94   | 415  | 535   | 737   | 936   | 974   | 223  | 592   | 669     | 878   | 878   |
| 15 Jun | 1,584 | 668   | 126  | 423  | 592   | 873   | 1,136 | 1,031 | 237  | 773   | 744     | 944   | 944   |
| 16 Jun | 1,815 | 775   | 134  | 436  | 612   | 1,015 | 1,163 | 1,059 | 244  | 888   | 814     | 1,057 | 1,057 |
| 17 Jun | 1,872 | 778   | 144  | 442  | 745   | 1,134 | 1,369 | 1,101 | 256  | 994   | 884     | 1,287 | 1,287 |
| 18 Jun | 1,951 | 780   | 203  | 474  | 806   | 1,214 | 1,492 | 1,128 | 297  | 1,013 | 936     | 1,523 | 1,523 |
| 19 Jun | 2,061 | 841   | 245  | 494  | 1,069 | 1,414 | 1,632 | 1,264 | 349  | 1,054 | 1,042   | 1,634 | 1,634 |
| 20 Jun | 2,376 | 865   | 288  | 535  | 1,296 | 1,646 | 1,815 | 1,332 | 449  | 1,254 | 1,186   | 1,705 | 1,705 |
| 21 Jun | 2,615 | 1,100 | 320  | 600  | 1,570 | 1,698 | 1,969 | 1,350 | 626  | 1,279 | 1,313   | 1,749 | 1,749 |
| 22 Jun | 2,732 | 1,140 | 320  | 637  | 1,637 | 1,825 | 2,163 | 1,356 | 651  | 1,393 | 1,385   | 1,913 | 1,913 |
| 23 Jun | 2,864 | 1,145 | 343  | 657  | 1,714 | 1,859 | 2,318 | 1,439 | 767  | 1,487 | 1,459   | 1,985 | 1,985 |
| 24 Jun | 2,886 | 1,245 | 364  | 703  | 1,794 | 1,964 | 2,440 | 1,475 | 786  | 1,626 | 1,528   | 2,136 | 2,136 |
| 25 Jun | 2,906 | 1,264 | 394  | 727  | 1,949 | 2,164 | 2,505 | 1,495 | 808  | 1,670 | 1,588   | 2,190 | 2,190 |
| 26 Jun | 2,928 | 1,295 | 411  | 786  | 1,990 | 2,248 | 2,579 | 1,522 | 841  | 1,743 | 1,634   | 2,338 | 2,338 |
| 27 Jun | 3,002 | 1,343 | 453  | 795  | 2,072 | 2,329 | 2,629 | 1,530 | 865  | 1,845 | 1,686   | 2,438 | 2,438 |
| 28 Jun | 3,037 | 1,344 | 453  | 833  | 2,088 | 2,397 | 2,700 | 1,558 | 874  | 1,997 | 1,728   | 2,476 | 2,476 |
| 29 Jun | 3,049 | 1,360 | 475  | 852  | 2,134 | 2,530 | 2,722 | 1,594 | 904  | 2,056 | 1,768   | 2,528 | 2,528 |
| 30 Jun | 3,050 | 1,363 | 520  | 855  | 2,221 | 2,670 | 2,753 | 1,598 | 919  | 2,169 | 1,812   | 2,565 | 2,565 |

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| Date   | Year  |       |      |       |       |       |       |       |       |       | Average | 2016  |
|--------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|---------|-------|
|        | 2006  | 2007  | 2008 | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  |         |       |
| 1 Jul  | 3,088 | 1,367 | 526  | 946   | 2,230 | 2,734 | 2,891 | 1,629 | 930   | 2,207 | 1,816   | 2,602 |
| 2 Jul  | 3,120 | 1,389 | 530  | 990   | 2,363 | 2,849 | 2,894 | 1,629 | 955   | 2,238 | 1,858   | 2,782 |
| 3 Jul  | 3,185 | 1,399 | 548  | 994   | 2,442 | 2,931 | 2,935 | 1,648 | 963   | 2,360 | 1,894   | 2,806 |
| 4 Jul  | 3,242 | 1,399 | 553  | 994   | 2,472 | 3,003 | 2,953 | 1,668 | 973   | 2,421 | 1,917   | 2,874 |
| 5 Jul  | 3,367 | 1,404 | 562  | 1,011 | 2,531 | 3,062 | 2,988 | 1,675 | 1,005 | 2,464 | 1,956   | 2,941 |
| 6 Jul  | 3,492 | 1,409 | 570  | 1,014 | 2,545 | 3,114 | 3,020 | 1,686 | 1,021 | 2,475 | 1,986   | 2,975 |
| 7 Jul  | 3,630 | 1,415 | 573  | 1,023 | 2,571 | 3,140 | 3,057 | 1,718 | 1,040 | 2,525 | 2,019   | 3,026 |
| 8 Jul  | 3,647 | 1,417 | 575  | 1,025 | 2,635 | 3,156 | 3,075 | 1,721 | 1,044 | 2,538 | 2,033   | 3,039 |
| 9 Jul  | 3,650 | 1,423 | 579  | 1,028 | 2,647 | 3,175 | 3,082 | 1,725 | 1,052 | 2,559 | 2,040   | 3,073 |
| 10 Jul | 3,668 | 1,425 | 582  | 1,028 | 2,665 | 3,186 | 3,089 | 1,725 | 1,076 | 2,569 | 2,049   | 3,121 |
| 11 Jul | 3,755 | 1,432 | 582  | 1,040 | 2,671 | 3,198 | 3,089 | 1,726 | 1,084 | 2,574 | 2,064   | 3,148 |
| 12 Jul | 3,792 | 1,432 | 585  | 1,071 | 2,678 | 3,225 | 3,099 | 1,731 | 1,098 | 2,580 | 2,079   | 3,168 |
| 13 Jul | 3,797 | 1,460 | 585  | 1,071 | 2,700 | 3,248 | 3,105 | 1,735 | 1,133 | 2,593 | 2,093   | 3,180 |
| 14 Jul | 3,799 | 1,460 | 586  | 1,071 | 2,708 | 3,272 | 3,116 | 1,735 | 1,138 | 2,608 | 2,098   | 3,200 |
| 15 Jul | 3,808 | 1,461 | 586  | 1,071 | 2,724 | 3,277 | 3,122 | 1,736 | 1,149 | 2,620 | 2,104   | 3,211 |
| 16 Jul | 3,830 | 1,470 | 586  | 1,072 | 2,730 | 3,288 | 3,124 | 1,743 | 1,157 | 2,664 | 2,111   | 3,214 |
| 17 Jul | 3,830 | 1,558 | 588  | 1,073 | 2,743 | 3,298 | 3,126 | 1,745 | 1,158 | 2,674 | 2,124   | 3,226 |
| 18 Jul | 3,830 | 1,558 | 588  | 1,073 | 2,744 | 3,306 | 3,128 | 1,748 | 1,158 | 2,678 | 2,126   | 3,292 |
| 19 Jul | 3,830 | 1,560 | 590  | 1,075 | 2,751 | 3,314 | 3,131 | 1,748 | 1,159 | 2,687 | 2,129   | 3,307 |
| 20 Jul | 3,831 | 1,565 | 594  | 1,086 | 2,757 | 3,324 | 3,134 | 1,750 | 1,162 | 2,689 | 2,134   | 3,316 |
| 21 Jul | 3,831 | 1,568 | 598  | 1,086 | 2,763 | 3,327 | 3,138 | 1,750 | 1,162 | 2,697 | 2,136   | 3,317 |
| 22 Jul | 3,831 | 1,569 | 598  | 1,087 | 2,763 | 3,330 | 3,139 | 1,750 | 1,163 | 2,698 | 2,137   | 3,326 |
| 23 Jul | 3,831 | 1,570 | 599  | 1,088 | 2,763 | 3,333 | 3,140 | 1,754 | 1,167 | 2,703 | 2,138   | 3,342 |
| 24 Jul | 3,832 | 1,570 | 602  | 1,088 | 2,765 | 3,334 | 3,145 | 1,754 | 1,168 | 2,704 | 2,140   | 3,351 |
| 25 Jul | 3,833 | 1,576 | 683  | 1,088 | 2,769 | 3,335 | 3,147 | 1,756 | 1,168 | 2,706 | 2,151   | 3,353 |
| 26 Jul | 3,835 | 1,605 | 686  | 1,090 | 2,791 | 3,338 | 3,148 | 1,759 | 1,169 | 2,712 | 2,158   | 3,358 |
| 27 Jul | 3,835 | 1,605 | 686  | 1,098 | 2,793 | 3,341 | 3,153 | 1,761 | 1,174 | 2,718 | 2,161   | 3,360 |
| 28 Jul | 3,837 | 1,612 | 688  | 1,098 | 2,796 | 3,343 | 3,159 | 1,762 | 1,174 | 2,720 | 2,163   | 3,361 |
| 29 Jul | 3,837 | 1,613 | 690  | 1,098 | 2,815 | 3,346 | 3,160 | 1,766 | 1,176 | 2,724 | 2,167   | 3,364 |
| 30 Jul | 3,837 | 1,618 | 691  | 1,098 | 2,831 | 3,359 | 3,166 | 1,767 | 1,176 | 2,726 | 2,171   | 3,366 |
| 31 Jul | 3,837 | 1,631 | 692  | 1,100 | 2,841 | 3,365 | 3,167 | 1,767 | 1,177 | 2,733 | 2,175   | 3,371 |

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| Date   | Year  |       |      |       |       |       |       |       |       |       | Average | 2016  |
|--------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|---------|-------|
|        | 2006  | 2007  | 2008 | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  |         |       |
| 1 Aug  | 3,838 | 1,632 | 699  | 1,100 | 2,851 | 3,367 | 3,167 | 1,769 | 1,177 | 2,737 | 2,178   | 3,373 |
| 2 Aug  | 3,838 | 1,634 | 704  | 1,100 | 2,851 | 3,378 | 3,172 | 1,772 | 1,177 | 2,742 | 2,181   | 3,377 |
| 3 Aug  | 3,839 | 1,635 | 705  | 1,101 | 2,853 | 3,384 | 3,174 | 1,772 | 1,177 | 2,745 | 2,182   | 3,378 |
| 4 Aug  | 3,904 | 1,635 | 706  | 1,104 | 2,856 | 3,385 | 3,177 | 1,772 | 1,177 | 2,751 | 2,191   | 3,384 |
| 5 Aug  | 3,906 | 1,667 | 707  | 1,110 | 2,870 | 3,385 | 3,181 | 1,772 | 1,178 | 2,753 | 2,197   | 3,385 |
| 6 Aug  | 3,906 | 1,667 | 728  | 1,110 | 2,875 | 3,385 | 3,183 | 1,787 | 1,178 | 2,757 | 2,202   | 3,391 |
| 7 Aug  | 3,906 | 1,667 | 728  | 1,112 | 2,877 | 3,389 | 3,184 | 1,788 | 1,178 | 2,761 | 2,203   | 3,395 |
| 8 Aug  | 3,910 | 1,669 | 733  | 1,112 | 2,877 | 3,390 | 3,185 | 1,789 | 1,178 | 2,761 | 2,205   | 3,396 |
| 9 Aug  | 3,932 | 1,669 | 734  | 1,113 | 2,893 | 3,390 | 3,186 | 1,795 | 1,178 | 2,765 | 2,210   | 3,396 |
| 10 Aug | 3,935 | 1,669 | 734  | 1,122 | 2,896 | 3,392 | 3,187 | 1,796 | 1,179 | 2,765 | 2,212   | 3,396 |
| 11 Aug | 3,954 | 1,670 | 734  | 1,126 | 2,899 | 3,398 | 3,187 | 1,797 | 1,179 | 2,765 | 2,216   | 3,396 |
| 12 Aug | 3,983 | 1,671 | 734  | 1,129 | 2,901 | 3,399 | 3,187 | 1,800 | 1,179 | 2,767 | 2,220   | 3,396 |
| 13 Aug | 3,989 | 1,671 | 734  | 1,145 | 2,902 | 3,399 | 3,187 | 1,803 | 1,180 | 2,768 | 2,223   | 3,396 |
| 14 Aug | 3,995 | 1,678 | 734  | 1,146 | 2,904 | 3,402 | 3,187 | 1,804 | 1,180 | 2,768 | 2,226   | 3,398 |
| 15 Aug | 4,012 | 1,679 | 735  | 1,163 | 2,906 | 3,403 | 3,187 | 1,805 | 1,181 | 2,768 | 2,230   | 3,398 |
| 16 Aug | 4,036 | 1,684 | 735  | 1,165 | 2,908 | 3,404 | 3,188 | 1,805 | 1,181 | 2,768 | 2,234   | 3,401 |
| 17 Aug | 4,067 | 1,689 | 736  | 1,166 | 2,911 | 3,407 | 3,189 | 1,805 | 1,181 | 2,772 | 2,239   | 3,409 |
| 18 Aug | 4,086 | 1,690 | 736  | 1,167 | 2,911 | 3,408 | 3,189 | 1,809 | 1,181 | 2,777 | 2,242   | 3,411 |
| 19 Aug | 4,088 | 1,695 | 736  | 1,167 | 2,912 | 3,411 | 3,189 | 1,811 | 1,181 | 2,777 | 2,243   | 3,411 |
| 20 Aug | 4,100 | 1,696 | 739  | 1,183 | 2,912 | 3,413 | 3,191 | 1,815 | 1,182 | 2,777 | 2,248   | 3,411 |
| 21 Aug | 4,102 | 1,699 | 740  | 1,195 | 2,913 | 3,413 | 3,191 | 1,817 | 1,182 | 2,777 | 2,250   | 3,413 |
| 22 Aug | 4,104 | 1,699 | 740  | 1,197 | 2,913 | 3,413 | 3,191 | 1,820 | 1,182 | 2,777 | 2,251   | 3,416 |
| 23 Aug | 4,106 | 1,699 | 740  | 1,222 | 2,913 | 3,414 | 3,196 | 1,820 | 1,182 | 2,777 | 2,255   | 3,418 |
| 24 Aug | 4,106 | 1,708 | 741  | 1,226 | 2,914 | 3,414 | 3,197 | 1,820 | 1,182 | 2,777 | 2,256   | 3,419 |
| 25 Aug | 4,107 | 1,710 | 742  | 1,253 | 2,916 | 3,420 | 3,197 | 1,820 | 1,182 | 2,777 | 2,261   | 3,421 |
| 26 Aug | 4,108 | 1,711 | 743  | 1,262 | 2,916 | 3,420 | 3,197 | 1,820 | 1,182 | 2,777 | 2,262   | 3,424 |
| 27 Aug | 4,109 | 1,731 | 743  | 1,268 | 2,916 | 3,420 | 3,197 | 1,820 | 1,182 | 2,777 | 2,265   | 3,430 |
| 28 Aug | 4,112 | 1,736 | 745  | 1,269 | 2,916 | 3,420 | 3,197 | 1,820 | 1,182 | 2,777 | 2,266   | 3,430 |
| 29 Aug | 4,112 | 1,748 | 745  | 1,294 | 2,916 | 3,420 | 3,197 | 1,820 | 1,182 | 2,777 | 2,270   | 3,430 |
| 30 Aug | 4,112 | 1,759 | 745  | 1,299 | 2,916 | 3,420 | 3,197 | 1,820 | 1,182 | 2,777 | 2,272   | 3,430 |
| 31 Aug | 4,112 | 1,759 | 745  | 1,299 | 2,916 | 3,420 | 3,197 | 1,820 | 1,182 | 2,777 | 2,272   | 3,431 |
| 1 Sep  | 4,112 | 1,759 | 745  | 1,299 | 2,916 | 3,420 | 3,197 | 1,823 | 1,182 | 2,777 | 2,273   | 3,431 |
| 2 Sep  | 4,112 | 1,759 | 745  | 1,301 | 2,916 | 3,420 | 3,197 | 1,824 | 1,182 | 2,777 | 2,273   | 3,433 |
| 3 Sep  | 4,112 | 1,759 | 746  | 1,302 | 2,916 | 3,420 | 3,197 | 1,824 | 1,182 | 2,777 | 2,273   | 3,433 |
| 4 Sep  | 4,112 | 1,759 | 746  | 1,306 | 2,916 | 3,420 | 3,197 | 1,824 | 1,182 | 2,777 | 2,274   | 3,434 |
| 5 Sep  | 4,112 | 1,760 | 746  | 1,306 | 2,916 | 3,420 | 3,197 | 1,824 | 1,182 | 2,777 | 2,274   | 3,434 |
| 6 Sep  | 4,112 | 1,760 | 746  | 1,306 | 2,917 | 3,420 | 3,197 | 1,824 | 1,182 | 2,777 | 2,274   | 3,434 |
| 7 Sep  | 4,112 | 1,760 | 746  | 1,306 | 2,917 | 3,420 | 3,197 | 1,824 | 1,182 | 2,777 | 2,274   | 3,434 |
| 8 Sep  | 4,112 | 1,763 | 746  | 1,306 | 2,917 | 3,420 | 3,197 | 1,824 | 1,182 | 2,777 | 2,274   | 3,434 |
| 9 Sep  | 4,112 | 1,765 | 746  | 1,306 | 2,917 | 3,420 | 3,197 | 1,824 | 1,182 | 2,777 | 2,274   | 3,434 |
| 10 Sep | 4,112 | 1,765 | 746  | 1,306 | 2,917 | 3,420 | 3,197 | 1,824 | 1,182 | 2,777 | 2,274   | 3,434 |
| 11 Sep | 4,112 | 1,765 | 748  | 1,307 | 2,917 | 3,420 | 3,197 | 1,824 | 1,182 | 2,777 | 2,275   | 3,434 |
| 12 Sep | 4,112 | 1,765 | 752  | 1,307 | 2,917 | 3,420 | 3,197 | 1,824 | 1,182 | 2,777 | 2,275   | 3,434 |

Source: Fuerst 2015: Table 5; B. Fuerst, Fishery Biologist, ADF&G, Kodiak, unpublished data.

Appendix D2.–Ayakulik River Chinook salmon daily cumulative weir counts, 2006–2016.

| Date   | Year  |       |       |       |       |       |       |       |      |       | Average | 2016  |       |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|---------|-------|-------|
|        | 2006  | 2007  | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014 | 2015  |         |       |       |
| 20 May | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0    | 0     | 0       | 0     | 0     |
| 21 May | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0    | 0     | 0       | 0     | 0     |
| 22 May | 0     | 14    | 0     | 0     | 0     | 0     | 2     | 0     | 0    | 0     | 2       | 0     | 0     |
| 23 May | 0     | 14    | 0     | 1     | 2     | 0     | 5     | 0     | 0    | 0     | 2       | 0     | 0     |
| 24 May | 0     | 14    | 0     | 1     | 3     | 0     | 19    | 0     | 0    | 0     | 4       | 0     | 0     |
| 25 May | 0     | 14    | 0     | 2     | 3     | 3     | 19    | 0     | 1    | 4     | 5       | 11    | 11    |
| 26 May | 0     | 14    | 0     | 3     | 3     | 17    | 32    | 1     | 4    | 4     | 8       | 48    | 48    |
| 27 May | 0     | 14    | 0     | 3     | 20    | 27    | 33    | 8     | 4    | 8     | 12      | 72    | 72    |
| 28 May | 0     | 14    | 0     | 3     | 20    | 34    | 33    | 15    | 13   | 14    | 15      | 181   | 181   |
| 29 May | 0     | 18    | 0     | 7     | 26    | 44    | 42    | 22    | 21   | 27    | 21      | 256   | 256   |
| 30 May | 0     | 18    | 0     | 7     | 49    | 58    | 54    | 41    | 28   | 35    | 29      | 320   | 320   |
| 31 May | 0     | 25    | 0     | 7     | 58    | 74    | 71    | 47    | 35   | 55    | 37      | 373   | 373   |
| 1 Jun  | 32    | 27    | 0     | 12    | 93    | 141   | 78    | 60    | 45   | 67    | 56      | 399   | 399   |
| 2 Jun  | 74    | 31    | 1     | 16    | 111   | 172   | 86    | 80    | 97   | 100   | 77      | 430   | 430   |
| 3 Jun  | 94    | 52    | 1     | 17    | 112   | 177   | 106   | 87    | 111  | 112   | 87      | 476   | 476   |
| 4 Jun  | 101   | 61    | 10    | 72    | 137   | 197   | 124   | 123   | 127  | 137   | 109     | 518   | 518   |
| 5 Jun  | 104   | 71    | 11    | 98    | 265   | 212   | 127   | 135   | 167  | 152   | 134     | 532   | 532   |
| 6 Jun  | 128   | 192   | 16    | 130   | 338   | 232   | 156   | 198   | 179  | 184   | 175     | 597   | 597   |
| 7 Jun  | 136   | 222   | 16    | 176   | 368   | 282   | 168   | 361   | 179  | 216   | 212     | 639   | 639   |
| 8 Jun  | 192   | 365   | 17    | 176   | 392   | 317   | 179   | 363   | 184  | 228   | 241     | 681   | 681   |
| 9 Jun  | 206   | 438   | 31    | 284   | 514   | 392   | 224   | 476   | 196  | 252   | 301     | 799   | 799   |
| 10 Jun | 238   | 438   | 36    | 370   | 668   | 432   | 302   | 488   | 203  | 252   | 343     | 955   | 955   |
| 11 Jun | 272   | 477   | 88    | 391   | 773   | 463   | 331   | 562   | 212  | 252   | 382     | 1,059 | 1,059 |
| 12 Jun | 319   | 644   | 98    | 478   | 804   | 563   | 392   | 644   | 214  | 283   | 444     | 1,251 | 1,251 |
| 13 Jun | 360   | 734   | 122   | 629   | 836   | 980   | 527   | 699   | 238  | 405   | 553     | 1,367 | 1,367 |
| 14 Jun | 637   | 988   | 209   | 645   | 866   | 1,158 | 755   | 774   | 254  | 469   | 676     | 1,454 | 1,454 |
| 15 Jun | 668   | 1,346 | 216   | 763   | 904   | 1,231 | 812   | 892   | 277  | 560   | 767     | 1,542 | 1,542 |
| 16 Jun | 668   | 1,637 | 411   | 863   | 934   | 1,310 | 957   | 897   | 320  | 638   | 864     | 1,740 | 1,740 |
| 17 Jun | 748   | 1,702 | 481   | 871   | 960   | 1,420 | 1,038 | 1,078 | 350  | 646   | 929     | 1,904 | 1,904 |
| 18 Jun | 750   | 1,707 | 499   | 941   | 1,110 | 1,496 | 1,161 | 1,110 | 365  | 702   | 984     | 1,938 | 1,938 |
| 19 Jun | 951   | 1,819 | 547   | 1,029 | 1,452 | 1,687 | 1,371 | 1,275 | 370  | 743   | 1,124   | 2,201 | 2,201 |
| 20 Jun | 1,574 | 1,944 | 920   | 1,065 | 1,721 | 1,893 | 1,423 | 1,339 | 426  | 795   | 1,310   | 2,408 | 2,408 |
| 21 Jun | 1,583 | 2,009 | 1,084 | 1,127 | 1,763 | 2,127 | 1,679 | 1,354 | 449  | 820   | 1,400   | 2,523 | 2,523 |
| 22 Jun | 1,740 | 2,103 | 1,216 | 1,133 | 2,183 | 2,314 | 1,961 | 1,363 | 476  | 930   | 1,542   | 2,649 | 2,649 |
| 23 Jun | 1,762 | 2,400 | 1,248 | 1,266 | 2,451 | 2,389 | 1,978 | 1,455 | 510  | 1,064 | 1,652   | 2,710 | 2,710 |
| 24 Jun | 1,898 | 2,482 | 1,495 | 1,364 | 2,555 | 2,529 | 2,077 | 1,573 | 551  | 1,211 | 1,774   | 2,901 | 2,901 |
| 25 Jun | 1,925 | 2,576 | 1,495 | 1,430 | 2,886 | 2,618 | 2,135 | 1,718 | 592  | 1,289 | 1,866   | 3,094 | 3,094 |
| 26 Jun | 1,931 | 2,612 | 1,588 | 1,484 | 3,169 | 2,885 | 2,158 | 1,806 | 612  | 1,479 | 1,972   | 3,325 | 3,325 |
| 27 Jun | 1,932 | 3,081 | 1,653 | 1,558 | 3,285 | 2,942 | 2,420 | 1,821 | 618  | 1,664 | 2,097   | 3,513 | 3,513 |
| 28 Jun | 1,935 | 3,813 | 1,888 | 1,631 | 3,436 | 3,060 | 2,673 | 1,829 | 636  | 1,699 | 2,260   | 3,661 | 3,661 |
| 29 Jun | 1,951 | 4,175 | 2,128 | 1,788 | 3,663 | 3,107 | 2,969 | 1,897 | 660  | 1,699 | 2,404   | 3,713 | 3,713 |
| 30 Jun | 1,961 | 4,475 | 2,232 | 1,861 | 4,006 | 3,254 | 3,275 | 1,900 | 692  | 1,708 | 2,536   | 3,832 | 3,832 |

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| Date   | Year  |       |       |       |       |       |       |       |      |       | Average | 2016  |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|---------|-------|
|        | 2006  | 2007  | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014 | 2015  |         |       |
| 1 Jul  | 2,234 | 5,057 | 2,346 | 1,882 | 4,175 | 3,410 | 3,391 | 1,939 | 702  | 1,721 | 2,686   | 3,942 |
| 2 Jul  | 2,291 | 5,128 | 2,367 | 2,009 | 4,217 | 3,570 | 3,498 | 1,964 | 703  | 1,756 | 2,750   | 4,039 |
| 3 Jul  | 2,424 | 5,448 | 2,468 | 2,058 | 4,442 | 3,704 | 3,702 | 1,964 | 713  | 1,825 | 2,875   | 4,079 |
| 4 Jul  | 2,531 | 5,602 | 2,490 | 2,163 | 4,703 | 3,774 | 3,765 | 1,988 | 727  | 1,909 | 2,965   | 4,145 |
| 5 Jul  | 2,549 | 5,801 | 2,564 | 2,235 | 4,840 | 3,849 | 3,873 | 2,009 | 745  | 1,940 | 3,041   | 4,164 |
| 6 Jul  | 2,568 | 5,936 | 2,569 | 2,250 | 4,900 | 3,888 | 4,273 | 2,009 | 820  | 1,990 | 3,120   | 4,198 |
| 7 Jul  | 2,568 | 6,051 | 2,572 | 2,300 | 5,015 | 3,910 | 4,325 | 2,055 | 825  | 2,006 | 3,163   | 4,248 |
| 8 Jul  | 2,568 | 6,164 | 2,583 | 2,357 | 5,061 | 3,973 | 4,356 | 2,096 | 831  | 2,034 | 3,202   | 4,266 |
| 9 Jul  | 2,576 | 6,197 | 2,588 | 2,396 | 5,082 | 4,039 | 4,389 | 2,114 | 849  | 2,049 | 3,228   | 4,285 |
| 10 Jul | 2,581 | 6,211 | 2,605 | 2,478 | 5,125 | 4,061 | 4,444 | 2,142 | 882  | 2,078 | 3,261   | 4,318 |
| 11 Jul | 2,723 | 6,291 | 2,652 | 2,492 | 5,184 | 4,084 | 4,482 | 2,249 | 891  | 2,100 | 3,315   | 4,328 |
| 12 Jul | 2,831 | 6,385 | 2,740 | 2,516 | 5,186 | 4,150 | 4,539 | 2,249 | 895  | 2,105 | 3,360   | 4,361 |
| 13 Jul | 2,845 | 6,420 | 2,823 | 2,523 | 5,189 | 4,160 | 4,565 | 2,249 | 896  | 2,141 | 3,381   | 4,379 |
| 14 Jul | 2,845 | 6,451 | 2,832 | 2,541 | 5,240 | 4,183 | 4,572 | 2,255 | 899  | 2,168 | 3,399   | 4,409 |
| 15 Jul | 2,847 | 6,457 | 2,860 | 2,561 | 5,240 | 4,194 | 4,620 | 2,258 | 901  | 2,185 | 3,412   | 4,430 |
| 16 Jul | 2,848 | 6,471 | 2,910 | 2,564 | 5,251 | 4,215 | 4,621 | 2,263 | 905  | 2,201 | 3,425   | 4,464 |
| 17 Jul | 2,856 | 6,472 | 2,960 | 2,572 | 5,259 | 4,225 | 4,622 | 2,283 | 905  | 2,253 | 3,441   | 4,480 |
| 18 Jul | 2,866 | 6,475 | 2,960 | 2,576 | 5,272 | 4,227 | 4,623 | 2,283 | 907  | 2,281 | 3,447   | 4,491 |
| 19 Jul | 2,922 | 6,485 | 2,974 | 2,580 | 5,272 | 4,227 | 4,635 | 2,286 | 907  | 2,289 | 3,458   | 4,506 |
| 20 Jul | 2,924 | 6,492 | 2,982 | 2,587 | 5,274 | 4,232 | 4,651 | 2,299 | 907  | 2,299 | 3,465   | 4,517 |
| 21 Jul | 3,007 | 6,493 | 2,985 | 2,589 | 5,280 | 4,237 | 4,655 | 2,302 | 908  | 2,323 | 3,478   | 4,519 |
| 22 Jul | 3,007 | 6,495 | 2,985 | 2,592 | 5,283 | 4,248 | 4,657 | 2,303 | 910  | 2,338 | 3,482   | 4,529 |
| 23 Jul | 3,007 | 6,497 | 2,985 | 2,592 | 5,283 | 4,270 | 4,667 | 2,307 | 912  | 2,361 | 3,488   | 4,532 |
| 24 Jul | 3,056 | 6,499 | 2,986 | 2,596 | 5,283 | 4,275 | 4,689 | 2,307 | 913  | 2,371 | 3,498   | 4,532 |
| 25 Jul | 3,062 | 6,501 | 2,989 | 2,597 | 5,283 | 4,280 | 4,693 | 2,324 | 913  | 2,375 | 3,502   | 4,545 |
| 26 Jul | 3,066 | 6,508 | 3,000 | 2,597 | 5,287 | 4,281 | 4,693 | 2,337 | 913  | 2,380 | 3,506   | 4,546 |
| 27 Jul | 3,066 | 6,514 | 3,038 | 2,597 | 5,291 | 4,284 | 4,696 | 2,338 | 914  | 2,380 | 3,512   | 4,550 |
| 28 Jul | 3,066 | 6,515 | 3,048 | 2,597 | 5,291 | 4,289 | 4,706 | 2,340 | 914  | 2,380 | 3,515   | 4,557 |
| 29 Jul | 3,067 | 6,515 | 3,048 | 2,597 | 5,292 | 4,292 | 4,707 | 2,340 | 914  | 2,384 | 3,516   | 4,577 |
| 30 Jul | 3,067 | 6,515 | 3,054 | 2,602 | 5,293 | 4,294 | 4,716 | 2,342 | 914  | 2,384 | 3,518   | 4,578 |
| 31 Jul | 3,069 | 6,515 | 3,054 | 2,609 | 5,295 | 4,297 | 4,719 | 2,343 | 914  | 2,385 | 3,520   | 4,578 |

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| Date   | Year  |       |       |       |       |       |       |       |      |       | Average | 2016  |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|---------|-------|
|        | 2006  | 2007  | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014 | 2015  |         |       |
| 1 Aug  | 3,069 | 6,515 | 3,057 | 2,609 | 5,296 | 4,297 | 4,719 | 2,345 | 914  | 2,385 | 3,521   | 4,591 |
| 2 Aug  | 3,072 | 6,515 | 3,060 | 2,609 | 5,296 | 4,299 | 4,721 | 2,345 | 914  | 2,386 | 3,522   | 4,594 |
| 3 Aug  | 3,073 | 6,517 | 3,060 | 2,609 | 5,298 | 4,300 | 4,728 | 2,345 | 914  | 2,387 | 3,523   | 4,594 |
| 4 Aug  | 3,079 | 6,518 | 3,060 | 2,612 | 5,298 | 4,300 | 4,728 | 2,345 | 914  | 2,387 | 3,524   | 4,594 |
| 5 Aug  | 3,081 | 6,518 | 3,062 | 2,612 | 5,298 | 4,300 | 4,732 | 2,345 | 914  | 2,388 | 3,525   | 4,594 |
| 6 Aug  | 3,088 | 6,518 | 3,063 | 2,612 | 5,300 | 4,300 | 4,733 | 2,357 | 914  | 2,388 | 3,527   | 4,594 |
| 7 Aug  | 3,088 | 6,526 | 3,065 | 2,612 | 5,300 | 4,301 | 4,737 | 2,362 | 914  | 2,390 | 3,530   | 4,594 |
| 8 Aug  | 3,093 | 6,526 | 3,066 | 2,612 | 5,300 | 4,301 | 4,742 | 2,362 | 914  | 2,391 | 3,531   | 4,594 |
| 9 Aug  | 3,094 | 6,526 | 3,066 | 2,612 | 5,300 | 4,301 | 4,743 | 2,362 | 915  | 2,391 | 3,531   | 4,594 |
| 10 Aug | 3,094 | 6,526 | 3,066 | 2,613 | 5,300 | 4,301 | 4,746 | 2,362 | 915  | 2,392 | 3,532   | 4,594 |
| 11 Aug | 3,099 | 6,526 | 3,067 | 2,614 | 5,300 | 4,301 | 4,748 | 2,362 | 915  | 2,392 | 3,532   | 4,594 |
| 12 Aug | 3,102 | 6,526 | 3,067 | 2,614 | 5,300 | 4,301 | 4,751 | 2,362 | 916  | 2,392 | 3,533   | 4,594 |
| 13 Aug | 3,104 | 6,526 | 3,067 | 2,614 | 5,301 | 4,302 | 4,751 | 2,362 | 916  | 2,392 | 3,534   | 4,594 |
| 14 Aug | 3,106 | 6,526 | 3,067 | 2,614 | 5,301 | 4,315 | 4,752 | 2,363 | 916  | 2,392 | 3,535   | 4,594 |
| 15 Aug | 3,106 | 6,526 | 3,069 | 2,614 | 5,301 | 4,315 | 4,757 | 2,365 | 916  | 2,392 | 3,536   | 4,594 |
| 16 Aug | 3,106 | 6,527 | 3,070 | 2,614 | 5,301 | 4,316 | 4,758 | 2,367 | 916  | 2,392 | 3,537   | 4,594 |
| 17 Aug | 3,106 | 6,527 | 3,071 | 2,614 | 5,301 | 4,316 | 4,760 | 2,367 | 916  | 2,392 | 3,537   | 4,594 |
| 18 Aug | 3,106 | 6,527 | 3,071 | 2,615 | 5,301 | 4,316 | 4,760 | 2,369 | 916  | 2,392 | 3,537   | 4,594 |
| 19 Aug | 3,106 | 6,527 | 3,071 | 2,615 | 5,301 | 4,316 | 4,760 | 2,369 | 916  | 2,392 | 3,537   | 4,594 |
| 20 Aug | 3,106 | 6,531 | 3,071 | 2,615 | 5,301 | 4,316 | 4,760 | 2,369 | 916  | 2,392 | 3,538   | 4,594 |
| 21 Aug | 3,106 | 6,531 | 3,071 | 2,615 | 5,301 | 4,316 | 4,760 | 2,369 | 916  | 2,392 | 3,538   | 4,594 |
| 22 Aug | 3,106 | 6,531 | 3,071 | 2,615 | 5,301 | 4,316 | 4,760 | 2,369 | 916  | 2,392 | 3,538   | 4,594 |
| 23 Aug | 3,106 | 6,531 | 3,071 | 2,615 | 5,301 | 4,316 | 4,760 | 2,369 | 916  | 2,392 | 3,538   | 4,594 |
| 24 Aug | 3,106 | 6,531 | 3,071 | 2,615 | 5,301 | 4,316 | 4,760 | 2,369 | 916  | 2,392 | 3,538   | 4,594 |
| 25 Aug | 3,106 | 6,534 | 3,071 | 2,615 | 5,301 | 4,316 | 4,760 | 2,369 | 916  | 2,392 | 3,538   | 4,594 |
| 26 Aug | 3,106 | 6,535 | 3,071 | 2,615 | 5,301 | 4,316 | 4,760 | 2,369 | 917  | 2,392 | 3,538   | 4,594 |
| 27 Aug | 3,106 | 6,535 | 3,071 | 2,615 | 5,301 | 4,316 | 4,760 | 2,369 | 917  | 2,392 | 3,538   | 4,594 |
| 28 Aug | 3,106 | 6,535 | 3,071 | 2,615 | 5,301 | 4,316 | 4,760 | 2,369 | 917  | 2,392 | 3,538   | 4,594 |
| 29 Aug | 3,106 | 6,535 | 3,071 | 2,615 | 5,301 | 4,316 | 4,760 | 2,369 | 917  | 2,392 | 3,538   | 4,594 |
| 30 Aug | 3,106 | 6,535 | 3,071 | 2,615 | 5,301 | 4,316 | 4,760 | 2,369 | 917  | 2,392 | 3,538   | 4,594 |
| 31 Aug | 3,106 | 6,535 | 3,071 | 2,615 | 5,301 | 4,316 | 4,760 | 2,369 | 917  | 2,392 | 3,538   | 4,594 |
| 1 Sep  | 3,106 | 6,535 | 3,071 | 2,615 | 5,301 | 4,316 | 4,760 | 2,369 | 917  | 2,392 | 3,538   | 4,594 |
| 2 Sep  | 3,106 | 6,535 | 3,071 | 2,615 | 5,301 | 4,316 | 4,760 | 2,369 | 917  | 2,392 | 3,538   | 4,594 |
| 3 Sep  | 3,106 | 6,535 | 3,071 | 2,615 | 5,301 | 4,316 | 4,760 | 2,369 | 917  | 2,392 | 3,538   | 4,594 |
| 4 Sep  | 3,106 | 6,535 | 3,071 | 2,615 | 5,301 | 4,316 | 4,760 | 2,369 | 917  | 2,392 | 3,538   | 4,594 |
| 5 Sep  | 3,106 | 6,535 | 3,071 | 2,615 | 5,301 | 4,316 | 4,760 | 2,369 | 917  | 2,392 | 3,538   | 4,594 |
| 6 Sep  | 3,106 | 6,535 | 3,071 | 2,615 | 5,301 | 4,316 | 4,760 | 2,369 | 917  | 2,392 | 3,538   | 4,594 |
| 7 Sep  | 3,106 | 6,535 | 3,071 | 2,615 | 5,301 | 4,316 | 4,760 | 2,369 | 917  | 2,392 | 3,538   | 4,594 |
| 8 Sep  | 3,106 | 6,535 | 3,071 | 2,615 | 5,301 | 4,316 | 4,760 | 2,369 | 917  | 2,392 | 3,538   | 4,594 |
| 9 Sep  | 3,106 | 6,535 | 3,071 | 2,615 | 5,301 | 4,316 | 4,760 | 2,369 | 917  | 2,392 | 3,538   | 4,594 |
| 10 Sep | 3,106 | 6,535 | 3,071 | 2,615 | 5,301 | 4,316 | 4,760 | 2,369 | 917  | 2,392 | 3,538   | 4,594 |

Source: Fuerst 2015: Table 12; B. Fuerst, Fishery Biologist, ADF&G, Kodiak, unpublished data.

Appendix D3.–Chignik River Chinook salmon daily cumulative weir counts, 2006–2016.

| Date   | Year  |       |       |       |       |       |       |       |       |       | Average | 2016  |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|-------|
|        | 2006  | 2007  | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  |         |       |
| 16 Jun | 0     | 0     | 0     | 0     | 0     | 6     | 0     | 12    | 12    | 24    | 5       | 12    |
| 17 Jun | 18    | 6     | 0     | 0     | 6     | 6     | 0     | 12    | 36    | 42    | 13      | 12    |
| 18 Jun | 18    | 6     | 0     | 0     | 6     | 18    | 0     | 12    | 42    | 60    | 16      | 18    |
| 19 Jun | 24    | 6     | 6     | 18    | 6     | 18    | 0     | 12    | 60    | 60    | 21      | 18    |
| 20 Jun | 24    | 6     | 6     | 18    | 6     | 18    | 0     | 18    | 66    | 78    | 24      | 18    |
| 21 Jun | 24    | 12    | 6     | 18    | 18    | 18    | 0     | 24    | 72    | 84    | 28      | 30    |
| 22 Jun | 24    | 12    | 6     | 18    | 24    | 24    | 6     | 30    | 90    | 84    | 32      | 66    |
| 23 Jun | 30    | 12    | 6     | 18    | 30    | 31    | 12    | 36    | 103   | 84    | 36      | 90    |
| 24 Jun | 42    | 24    | 6     | 18    | 30    | 43    | 12    | 36    | 127   | 96    | 43      | 108   |
| 25 Jun | 72    | 30    | 18    | 18    | 30    | 43    | 12    | 36    | 165   | 114   | 54      | 144   |
| 26 Jun | 84    | 42    | 18    | 42    | 31    | 61    | 18    | 60    | 195   | 126   | 68      | 186   |
| 27 Jun | 138   | 48    | 18    | 48    | 31    | 85    | 18    | 60    | 267   | 146   | 86      | 198   |
| 28 Jun | 150   | 48    | 18    | 48    | 55    | 115   | 18    | 84    | 291   | 212   | 104     | 228   |
| 29 Jun | 162   | 54    | 24    | 48    | 61    | 115   | 18    | 90    | 339   | 212   | 112     | 276   |
| 30 Jun | 162   | 54    | 30    | 72    | 61    | 139   | 30    | 90    | 405   | 260   | 130     | 306   |
| 1 Jul  | 180   | 54    | 30    | 84    | 73    | 181   | 48    | 90    | 465   | 284   | 149     | 372   |
| 2 Jul  | 222   | 66    | 36    | 120   | 157   | 248   | 55    | 120   | 561   | 326   | 191     | 450   |
| 3 Jul  | 246   | 84    | 66    | 162   | 205   | 302   | 68    | 120   | 633   | 375   | 226     | 498   |
| 4 Jul  | 288   | 114   | 108   | 180   | 247   | 350   | 86    | 133   | 723   | 400   | 263     | 576   |
| 5 Jul  | 324   | 120   | 114   | 237   | 319   | 398   | 94    | 171   | 875   | 505   | 316     | 636   |
| 6 Jul  | 396   | 138   | 144   | 253   | 355   | 494   | 118   | 195   | 1,067 | 621   | 378     | 750   |
| 7 Jul  | 574   | 156   | 162   | 345   | 463   | 650   | 156   | 219   | 1,199 | 759   | 468     | 855   |
| 8 Jul  | 745   | 228   | 180   | 387   | 499   | 729   | 181   | 243   | 1,283 | 831   | 531     | 933   |
| 9 Jul  | 864   | 258   | 228   | 429   | 595   | 738   | 211   | 263   | 1,435 | 904   | 593     | 1,017 |
| 10 Jul | 921   | 372   | 241   | 543   | 799   | 813   | 241   | 299   | 1,554 | 952   | 674     | 1,095 |
| 11 Jul | 980   | 440   | 265   | 597   | 895   | 885   | 298   | 347   | 1,722 | 1,000 | 743     | 1,143 |
| 12 Jul | 1,034 | 626   | 308   | 706   | 1,225 | 990   | 352   | 413   | 1,789 | 1,144 | 859     | 1,198 |
| 13 Jul | 1,200 | 668   | 353   | 713   | 1,399 | 1,259 | 478   | 503   | 1,879 | 1,216 | 967     | 1,246 |
| 14 Jul | 1,388 | 718   | 384   | 755   | 1,537 | 1,393 | 532   | 546   | 1,934 | 1,294 | 1,048   | 1,300 |
| 15 Jul | 1,448 | 782   | 482   | 773   | 1,735 | 1,621 | 634   | 612   | 1,970 | 1,338 | 1,140   | 1,348 |
| 16 Jul | 1,540 | 839   | 560   | 779   | 1,759 | 1,669 | 652   | 649   | 1,994 | 1,380 | 1,182   | 1,390 |
| 17 Jul | 1,668 | 876   | 709   | 827   | 1,841 | 1,771 | 736   | 709   | 2,114 | 1,410 | 1,266   | 1,438 |
| 18 Jul | 1,720 | 1,037 | 829   | 863   | 1,944 | 1,867 | 838   | 727   | 2,190 | 1,417 | 1,343   | 1,450 |
| 19 Jul | 2,044 | 1,199 | 927   | 989   | 2,002 | 1,951 | 911   | 781   | 2,312 | 1,448 | 1,456   | 1,504 |
| 20 Jul | 2,226 | 1,321 | 1,019 | 1,055 | 2,170 | 2,071 | 929   | 835   | 2,397 | 1,460 | 1,548   | 1,516 |
| 21 Jul | 2,310 | 1,327 | 1,110 | 1,157 | 2,404 | 2,150 | 969   | 854   | 2,475 | 1,467 | 1,622   | 1,536 |
| 22 Jul | 2,424 | 1,375 | 1,146 | 1,229 | 2,609 | 2,216 | 1,017 | 890   | 2,493 | 1,473 | 1,687   | 1,560 |
| 23 Jul | 2,508 | 1,400 | 1,172 | 1,259 | 2,687 | 2,276 | 1,053 | 927   | 2,552 | 1,534 | 1,737   | 1,578 |
| 24 Jul | 2,694 | 1,462 | 1,220 | 1,283 | 2,759 | 2,366 | 1,065 | 957   | 2,609 | 1,576 | 1,799   | 1,608 |
| 25 Jul | 2,795 | 1,511 | 1,251 | 1,301 | 2,933 | 2,390 | 1,113 | 987   | 2,628 | 1,601 | 1,851   | 1,626 |
| 26 Jul | 2,871 | 1,541 | 1,288 | 1,331 | 3,065 | 2,420 | 1,133 | 1,005 | 2,630 | 1,661 | 1,895   | 1,632 |

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| Date   | Year  |       |       |       |       |       |       |       |       |       | Average | 2016  |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|-------|
|        | 2006  | 2007  | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  |         |       |
| 27 Jul | 2,917 | 1,545 | 1,343 | 1,337 | 3,141 | 2,456 | 1,151 | 1,035 | 2,672 | 1,685 | 1,928   | 1,650 |
| 28 Jul | 2,991 | 1,559 | 1,391 | 1,367 | 3,207 | 2,475 | 1,200 | 1,053 | 2,686 | 1,740 | 1,967   | 1,668 |
| 29 Jul | 3,058 | 1,589 | 1,423 | 1,385 | 3,243 | 2,487 | 1,236 | 1,065 | 2,716 | 1,758 | 1,996   | 1,668 |
| 30 Jul | 3,105 | 1,610 | 1,461 | 1,403 | 3,328 | 2,505 | 1,261 | 1,101 | 2,722 | 1,764 | 2,026   | 1,698 |
| 31 Jul | 3,159 | 1,622 | 1,486 | 1,403 | 3,358 | 2,535 | 1,261 | 1,119 | 2,735 | 1,788 | 2,047   | 1,716 |
| 1 Aug  | 3,202 | 1,651 | 1,498 | 1,409 | 3,382 | 2,553 | 1,273 | 1,155 | 2,742 | 1,814 | 2,068   | 1,740 |
| 2 Aug  | 3,208 | 1,677 | 1,504 | 1,421 | 3,406 | 2,595 | 1,309 | 1,162 | 2,755 | 1,844 | 2,088   | 1,752 |
| 3 Aug  | 3,280 | 1,684 | 1,516 | 1,457 | 3,412 | 2,613 | 1,309 | 1,162 | 2,761 | 1,856 | 2,105   | 1,752 |
| 4 Aug  | 3,305 | 1,720 | 1,540 | 1,488 | 3,442 | 2,619 | 1,321 | 1,174 | 2,777 | 1,886 | 2,127   | 1,777 |
| 5 Aug  | 3,329 | 1,732 | 1,564 | 1,506 | 3,454 | 2,625 | 1,333 | 1,174 | 2,791 | 1,904 | 2,141   | 1,777 |
| 6 Aug  | 3,353 | 1,732 | 1,572 | 1,518 | 3,454 | 2,625 | 1,346 | 1,180 | 2,791 | 1,929 | 2,150   | 1,783 |
| 7 Aug  | 3,365 | 1,732 | 1,578 | 1,529 | 3,479 | 2,631 | 1,352 | 1,180 | 2,799 | 1,941 | 2,159   | 1,795 |
| 8 Aug  | 3,390 | 1,750 | 1,584 | 1,547 | 3,497 | 2,636 | 1,364 | 1,186 | 2,799 | 1,971 | 2,172   | 1,795 |
| 9 Aug  | 3,408 | 1,768 | 1,590 | 1,571 | 3,515 | 2,641 | 1,376 | 1,192 | 2,808 | 1,983 | 2,185   | 1,795 |
| 10 Aug | 3,414 | 1,808 | 1,596 | 1,571 | 3,533 | 2,642 | 1,382 | 1,216 | 2,820 | 2,007 | 2,199   | 1,801 |
| 11 Aug | 3,450 | 1,808 | 1,603 | 1,571 | 3,539 | 2,649 | 1,394 | 1,223 | 2,838 | 2,019 | 2,209   | 1,825 |
| 12 Aug | 3,468 | 1,809 | 1,609 | 1,577 | 3,539 | 2,673 | 1,400 | 1,223 | 2,844 | 2,019 | 2,216   | 1,831 |
| 13 Aug | 3,474 | 1,827 | 1,628 | 1,577 | 3,539 | 2,673 | 1,400 | 1,223 | 2,850 | 2,024 | 2,222   | 1,837 |
| 14 Aug | 3,493 | 1,830 | 1,629 | 1,577 | 3,551 | 2,685 | 1,412 | 1,229 | 2,862 | 2,024 | 2,229   | 1,837 |
| 15 Aug | 3,505 | 1,831 | 1,629 | 1,577 | 3,569 | 2,685 | 1,412 | 1,235 | 2,881 | 2,030 | 2,235   | 1,843 |
| 16 Aug | 3,511 | 1,843 | 1,629 | 1,578 | 3,581 | 2,697 | 1,418 | 1,235 | 2,881 | 2,036 | 2,241   | 1,843 |
| 17 Aug | 3,517 | 1,856 | 1,636 | 1,584 | 3,599 | 2,703 | 1,424 | 1,235 | 2,887 | 2,042 | 2,248   | 1,843 |
| 18 Aug | 3,517 | 1,862 | 1,666 | 1,596 | 3,623 | 2,703 | 1,424 | 1,235 | 2,887 | 2,054 | 2,257   | 1,843 |
| 19 Aug | 3,517 | 1,910 | 1,678 | 1,602 | 3,629 | 2,703 | 1,424 | 1,241 | 2,887 | 2,054 | 2,265   | 1,843 |
| 20 Aug | 3,529 | 1,913 | 1,694 | 1,614 | 3,629 | 2,709 | 1,424 | 1,247 | 2,887 | 2,054 | 2,270   | 1,843 |
| 21 Aug | 3,529 | 1,931 | 1,700 | 1,620 | 3,629 | 2,716 | 1,430 | 1,247 | 2,887 | 2,054 | 2,274   | 1,843 |
| 22 Aug | 3,535 | 1,939 | 1,706 | 1,620 | 3,629 | 2,716 | 1,430 | 1,247 | 2,887 | 2,054 | 2,276   | 1,843 |
| 23 Aug | 3,535 | 1,957 | 1,718 | 1,620 | 3,629 | 2,716 | 1,443 | 1,247 | 2,887 | 2,054 | 2,281   | 1,843 |
| 24 Aug | 3,535 | 1,957 | 1,718 | 1,626 | 3,647 | 2,716 | 1,449 | 1,247 | 2,889 | 2,054 | 2,284   | 1,843 |
| 25 Aug | 3,535 | 1,963 | 1,724 | 1,626 | 3,649 | 2,716 | 1,449 | 1,247 | 2,889 | 2,054 | 2,285   | 1,843 |
| 26 Aug | 3,535 | 1,969 | 1,730 | 1,644 | 3,661 | 2,716 | 1,449 | 1,247 | 2,889 | 2,054 | 2,289   | 1,843 |
| 27 Aug | 3,535 | 1,976 | 1,730 | 1,662 | 3,661 | 2,716 | 1,449 | 1,247 | 2,895 | 2,054 | 2,293   | 1,843 |
| 28 Aug | 3,535 | 1,982 | 1,730 | 1,668 | 3,661 | 2,716 | 1,449 | 1,247 | 2,895 | 2,054 | 2,294   | 1,843 |
| 29 Aug | 3,535 | 1,994 | 1,730 | 1,674 | 3,661 | 2,716 | 1,449 | 1,247 | 2,895 | 2,054 | 2,296   | 1,843 |
| 30 Aug | 3,535 | 1,994 | 1,730 | 1,674 | 3,679 | 2,716 | 1,449 | 1,247 | 2,895 | 2,054 | 2,297   | 1,843 |
| 31 Aug | 3,535 | 2,000 | 1,730 | 1,680 | 3,679 | 2,716 | 1,449 | 1,247 | 2,895 | 2,054 | 2,299   | 1,843 |
| 1 Sep  | 3,535 | 2,000 | 1,730 | 1,680 | 3,679 | 2,722 | 1,449 | 1,247 | 2,895 | 2,054 | 2,299   | 1,843 |
| 2 Sep  | 3,535 | 2,000 | 1,730 | 1,680 | 3,679 | 2,728 | 1,449 | 1,253 | 2,895 | 2,054 | 2,300   | 1,843 |

Source: Fuerst 2015.

Appendix D4.–Buskin River coho salmon daily cumulative weir counts, 2006–2016.

| Date   | Year  |      |       |      |      |      |      |      |      |      | Average | 2016 |     |
|--------|-------|------|-------|------|------|------|------|------|------|------|---------|------|-----|
|        | 2006  | 2007 | 2008  | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |         |      |     |
| 17 Jul | 0     | 0    | 0     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0       | 0    | 0   |
| 18 Jul | 0     | 0    | 0     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0       | 0    | 0   |
| 19 Jul | 0     | 0    | 0     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0       | 0    | 0   |
| 20 Jul | 0     | 0    | 0     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0       | 0    | 0   |
| 21 Jul | 0     | 0    | 0     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0       | 0    | 0   |
| 22 Jul | 0     | 0    | 0     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0       | 0    | 0   |
| 23 Jul | 0     | 1    | 0     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0       | 0    | 0   |
| 24 Jul | 0     | 1    | 0     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0       | 0    | 0   |
| 25 Jul | 0     | 1    | 0     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0       | 0    | 0   |
| 26 Jul | 0     | 1    | 0     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0       | 0    | 0   |
| 27 Jul | 0     | 1    | 0     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0       | 0    | 0   |
| 28 Jul | 0     | 1    | 0     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0       | 0    | 0   |
| 29 Jul | 0     | 2    | 0     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0       | 0    | 0   |
| 30 Jul | 0     | 2    | 0     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0       | 0    | 0   |
| 31 Jul | 0     | 2    | 0     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0       | 0    | 0   |
| 1 Aug  | 0     | 2    | 1     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0       | 0    | 0   |
| 2 Aug  | 0     | 2    | 1     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0       | 0    | 0   |
| 3 Aug  | 0     | 2    | 2     | 2    | 0    | 0    | 0    | 3    | 0    | 0    | 1       | 0    | 0   |
| 4 Aug  | 2     | 2    | 3     | 6    | 0    | 0    | 0    | 7    | 0    | 0    | 2       | 0    | 0   |
| 5 Aug  | 7     | 2    | 8     | 8    | 0    | 0    | 0    | 9    | 0    | 0    | 3       | 2    | 2   |
| 6 Aug  | 9     | 2    | 8     | 8    | 0    | 0    | 0    | 10   | 0    | 0    | 4       | 3    | 3   |
| 7 Aug  | 20    | 4    | 8     | 17   | 0    | 0    | 0    | 10   | 0    | 0    | 6       | 10   | 10  |
| 8 Aug  | 34    | 4    | 16    | 27   | 5    | 0    | 0    | 10   | 0    | 0    | 10      | 12   | 12  |
| 9 Aug  | 61    | 5    | 26    | 33   | 20   | 0    | 0    | 18   | 3    | 0    | 17      | 12   | 12  |
| 10 Aug | 82    | 5    | 34    | 35   | 31   | 0    | 0    | 38   | 3    | 0    | 23      | 16   | 16  |
| 11 Aug | 103   | 7    | 50    | 52   | 40   | 0    | 3    | 54   | 4    | 0    | 31      | 16   | 16  |
| 12 Aug | 121   | 11   | 85    | 70   | 44   | 0    | 17   | 59   | 6    | 70   | 48      | 18   | 18  |
| 13 Aug | 154   | 14   | 103   | 81   | 49   | 0    | 50   | 75   | 7    | 70   | 60      | 21   | 21  |
| 14 Aug | 195   | 29   | 210   | 91   | 60   | 0    | 109  | 79   | 463  | 72   | 131     | 51   | 51  |
| 15 Aug | 208   | 34   | 251   | 94   | 79   | 0    | 147  | 93   | 463  | 74   | 144     | 63   | 63  |
| 16 Aug | 220   | 38   | 392   | 115  | 109  | 0    | 166  | 110  | 473  | 74   | 170     | 69   | 69  |
| 17 Aug | 256   | 42   | 476   | 131  | 139  | 0    | 207  | 129  | 511  | 75   | 197     | 86   | 86  |
| 18 Aug | 327   | 98   | 512   | 160  | 221  | 10   | 213  | 165  | 521  | 78   | 231     | 121  | 121 |
| 19 Aug | 414   | 120  | 571   | 179  | 267  | 13   | 300  | 177  | 540  | 82   | 266     | 137  | 137 |
| 20 Aug | 520   | 122  | 653   | 207  | 284  | 21   | 334  | 193  | 573  | 85   | 299     | 160  | 160 |
| 21 Aug | 910   | 131  | 741   | 232  | 298  | 31   | 339  | 206  | 573  | 87   | 355     | 189  | 189 |
| 22 Aug | 1,059 | 160  | 790   | 251  | 398  | 56   | 346  | 280  | 576  | 87   | 400     | 220  | 220 |
| 23 Aug | 1,138 | 232  | 959   | 260  | 419  | 69   | 347  | 367  | 586  | 88   | 447     | 324  | 324 |
| 24 Aug | 1,370 | 299  | 1,107 | 267  | 461  | 81   | 358  | 486  | 678  | 92   | 520     | 358  | 358 |
| 25 Aug | 1,554 | 346  | 1,185 | 280  | 492  | 255  | 363  | 613  | 762  | 102  | 595     | 410  | 410 |
| 26 Aug | 1,726 | 415  | 1,304 | 297  | 523  | 396  | 368  | 727  | 854  | 108  | 672     | 418  | 418 |

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| Date   | Year   |       |       |        |       |       |       |       |       |       | Average | 2016  |
|--------|--------|-------|-------|--------|-------|-------|-------|-------|-------|-------|---------|-------|
|        | 2006   | 2007  | 2008  | 2009   | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  |         |       |
| 27 Aug | 2,038  | 701   | 1,380 | 357    | 546   | 679   | 372   | 823   | 1,072 | 117   | 809     | 480   |
| 28 Aug | 2,318  | 1,250 | 1,466 | 626    | 561   | 826   | 375   | 855   | 1,112 | 133   | 952     | 487   |
| 29 Aug | 2,639  | 1,450 | 1,486 | 894    | 578   | 963   | 384   | 1,533 | 1,146 | 137   | 1,121   | 574   |
| 30 Aug | 3,907  | 1,700 | 1,519 | 1,113  | 584   | 1,121 | 397   | 2,033 | 1,203 | 141   | 1,372   | 660   |
| 31 Aug | 4,270  | 1,839 | 1,785 | 1,253  | 605   | 1,250 | 415   | 2,439 | 1,308 | 144   | 1,531   | 669   |
| 1 Sep  | 4,819  | 2,121 | 2,006 | 1,354  | 612   | 1,367 | 428   | 2,488 | 1,337 | 147   | 1,668   | 687   |
| 2 Sep  | 5,301  | 2,205 | 2,494 | 1,424  | 619   | 1,462 | 433   | 2,686 | 1,417 | 149   | 1,819   | 707   |
| 3 Sep  | 6,028  | 2,632 | 2,583 | 1,678  | 634   | 1,583 | 443   | 2,745 | 1,580 | 151   | 2,006   | 745   |
| 4 Sep  | 6,579  | 3,437 | 2,861 | 1,874  | 719   | 1,711 | 450   | 2,850 | 2,442 | 153   | 2,308   | 863   |
| 5 Sep  | 7,166  | 3,670 | 3,138 | 2,075  | 922   | 1,814 | 469   | 3,011 | 2,779 | 153   | 2,520   | 883   |
| 6 Sep  | 7,705  | 3,961 | 3,438 | 2,317  | 943   | 1,907 | 471   | 3,354 | 2,997 | 153   | 2,725   | 970   |
| 7 Sep  | 8,365  | 4,281 | 3,738 | 2,663  | 1,091 | 2,022 | 473   | 3,697 | 3,043 | 158   | 2,953   | 975   |
| 8 Sep  | 8,940  | 4,598 | 4,038 | 3,436  | 1,171 | 2,148 | 474   | 3,840 | 3,228 | 160   | 3,203   | 992   |
| 9 Sep  | 9,237  | 4,819 | 4,528 | 3,771  | 1,441 | 2,309 | 479   | 4,073 | 3,305 | 165   | 3,413   | 1,007 |
| 10 Sep | 9,467  | 4,981 | 5,017 | 4,041  | 1,471 | 2,439 | 482   | 4,306 | 3,427 | 180   | 3,581   | 1,017 |
| 11 Sep | 9,632  | 5,327 | 5,328 | 4,323  | 1,475 | 2,574 | 506   | 4,441 | 3,820 | 189   | 3,762   | 1,285 |
| 12 Sep | 9,663  | 5,701 | 5,662 | 4,605  | 1,488 | 2,720 | 526   | 4,560 | 4,298 | 196   | 3,942   | 1,329 |
| 13 Sep | 9,697  | 5,856 | 6,127 | 4,777  | 1,492 | 2,833 | 529   | 4,763 | 4,917 | 197   | 4,119   | 1,360 |
| 14 Sep | 10,114 | 5,999 | 6,266 | 5,146  | 1,538 | 2,988 | 532   | 4,788 | 5,048 | 201   | 4,262   | 1,377 |
| 15 Sep | 10,523 | 6,272 | 6,406 | 5,602  | 1,545 | 3,109 | 788   | 4,840 | 6,397 | 209   | 4,569   | 1,441 |
| 16 Sep | 10,729 | 6,439 | 6,583 | 5,602  | 1,551 | 3,191 | 1,023 | 4,849 | 6,940 | 212   | 4,712   | 1,483 |
| 17 Sep | 11,131 | 6,487 | 6,614 | 5,911  | 1,553 | 3,312 | 1,079 | 4,856 | 7,403 | 214   | 4,856   | 1,507 |
| 18 Sep | 11,530 | 6,536 | 7,155 | 6,583  | 1,556 | 3,499 | 1,424 | 4,890 | 7,711 | 217   | 5,110   | 1,511 |
| 19 Sep | 12,518 | 6,619 | 7,678 | 7,248  | 1,576 | 3,740 | 1,974 | 4,949 | 7,917 | 217   | 5,444   | 1,530 |
| 20 Sep | 12,770 | 6,713 | 7,962 | 8,567  | 1,578 | 3,934 | 2,361 | 5,009 | 8,044 | 219   | 5,716   | 1,551 |
| 21 Sep | 13,348 | 6,810 | 7,999 | 8,860  | 1,598 | 4,062 | 2,591 | 5,124 | 8,192 | 220   | 5,880   | 1,934 |
| 22 Sep | 13,348 | 6,911 | 8,087 | 9,390  | 1,901 | 4,239 | 2,891 | 5,269 | 8,195 | 221   | 6,045   | 2,114 |
| 23 Sep | 13,348 | 7,448 | 8,312 | 9,715  | 1,946 | 4,399 | 3,191 | 5,284 | 8,214 | 221   | 6,208   | 2,325 |
| 24 Sep | 13,348 | 8,171 | 8,398 | 9,810  | 2,819 | 4,657 | 3,491 | 5,285 | 8,216 | 221   | 6,442   | 2,360 |
| 25 Sep | 13,348 | 8,292 | 8,699 | 10,244 | 3,064 | 4,908 | 3,791 | 5,323 | 8,219 | 221   | 6,611   | 2,451 |
| 26 Sep | 13,348 | 8,366 | 8,834 | 10,304 | 3,174 | 5,073 | 4,091 | 5,327 | 8,222 | 223   | 6,696   | 2,486 |
| 27 Sep | 13,348 | 8,444 | 8,939 | 10,502 | 3,260 | 5,407 | 4,391 | 5,386 | 8,332 | 226   | 6,824   | 2,513 |
| 28 Sep | 13,348 | 8,752 | 9,003 | 10,573 | 3,301 | 5,753 | 4,691 | 5,386 | 8,413 | 232   | 6,945   | 2,513 |
| 29 Sep | 13,348 | 9,000 | 9,028 | 10,624 | 3,307 | 5,915 | 4,991 | 5,386 | 8,413 | 974   | 7,099   | 2,513 |
| 30 Sep | 13,348 | 9,001 | 9,028 | 10,624 | 3,309 | 5,941 | 5,291 | 5,386 | 8,413 | 987   | 7,133   | 2,513 |
| 1 Oct  | 13,348 | 9,001 | 9,028 | 10,624 | 5,794 | 5,961 | 5,291 | 5,386 | 8,413 | 987   | 7,383   | 2,513 |
| 2 Oct  | 13,348 | 9,001 | 9,028 | 10,624 | 6,028 | 5,969 | 5,291 | 5,386 | 8,413 | 1,223 | 7,431   | 2,513 |
| 3 Oct  | 13,348 | 9,001 | 9,028 | 10,624 | 6,237 | 5,982 | 5,291 | 5,386 | 8,413 | 1,890 | 7,520   | 2,513 |
| 4 Oct  | 13,348 | 9,001 | 9,028 | 10,624 | 6,537 | 6,026 | 5,291 | 5,386 | 8,413 | 1,920 | 7,557   | 2,513 |
| 5 Oct  | 13,348 | 9,001 | 9,028 | 10,624 | 6,766 | 6,026 | 5,291 | 5,386 | 8,413 | 1,920 | 7,580   | 2,513 |
| 6 Oct  | 13,348 | 9,001 | 9,028 | 10,624 | 6,803 | 6,026 | 5,291 | 5,386 | 8,413 | 2,220 | 7,614   | 2,513 |
| 7 Oct  | 13,348 | 9,001 | 9,028 | 10,624 | 6,808 | 6,026 | 5,291 | 5,386 | 8,413 | 2,652 | 7,658   | 2,513 |
| 8 Oct  | 13,348 | 9,001 | 9,028 | 10,624 | 6,808 | 6,026 | 5,291 | 5,386 | 8,413 | 4,341 | 7,827   | 2,513 |

Source: Fuerst 2015: Table 39; B. Fuerst, Fishery Biologist, ADF&G, Kodiak, unpublished data.

Appendix D5.–Buskin River sockeye salmon daily cumulative weir counts, 2006–2016.

| Date   | Year   |        |       |       |       |       |       |        |        |       | Average | 2016  |
|--------|--------|--------|-------|-------|-------|-------|-------|--------|--------|-------|---------|-------|
|        | 2006   | 2007   | 2008  | 2009  | 2010  | 2011  | 2012  | 2013   | 2014   | 2015  |         |       |
| 17 May | 0      | 0      | 0     | 0     | 0     | 0     | 0     |        | 0      |       | 0       | 0     |
| 18 May | 0      | 0      | 0     | 0     | 0     | 0     | 0     |        | 0      |       | 0       | 0     |
| 19 May | 1      | 0      | 0     | 0     | 0     | 0     | 0     |        | 10     | 0     | 1       | 0     |
| 20 May | 1      | 0      | 0     | 0     | 0     | 0     | 0     |        | 46     | 0     | 5       | 12    |
| 21 May | 10     | 0      | 0     | 0     | 0     | 0     | 0     | 1      | 48     | 4     | 6       | 125   |
| 22 May | 20     | 0      | 0     | 2     | 0     | 0     | 0     | 1      | 51     | 43    | 12      | 130   |
| 23 May | 20     | 10     | 0     | 2     | 0     | 0     | 0     | 2      | 53     | 116   | 20      | 144   |
| 24 May | 20     | 48     | 0     | 2     | 0     | 0     | 7     | 2      | 191    | 117   | 39      | 144   |
| 25 May | 20     | 57     | 0     | 2     | 0     | 0     | 80    | 89     | 206    | 117   | 57      | 144   |
| 26 May | 20     | 61     | 0     | 2     | 0     | 0     | 225   | 89     | 208    | 117   | 72      | 146   |
| 27 May | 20     | 61     | 0     | 2     | 0     | 0     | 311   | 116    | 374    | 117   | 100     | 224   |
| 28 May | 20     | 61     | 0     | 2     | 0     | 40    | 313   | 179    | 554    | 141   | 131     | 770   |
| 29 May | 20     | 61     | 0     | 102   | 288   | 323   | 336   | 251    | 628    | 357   | 237     | 776   |
| 30 May | 20     | 61     | 0     | 116   | 309   | 495   | 337   | 425    | 1,061  | 424   | 325     | 944   |
| 31 May | 20     | 63     | 0     | 116   | 332   | 677   | 402   | 676    | 1,202  | 720   | 421     | 1,162 |
| 1 Jun  | 20     | 64     | 4     | 116   | 383   | 835   | 544   | 844    | 1,422  | 816   | 505     | 1,316 |
| 2 Jun  | 20     | 112    | 4     | 116   | 650   | 960   | 870   | 1,004  | 1,455  | 924   | 612     | 1,811 |
| 3 Jun  | 148    | 380    | 4     | 183   | 662   | 1,161 | 870   | 1,325  | 1,637  | 1,045 | 742     | 2,236 |
| 4 Jun  | 406    | 487    | 13    | 183   | 946   | 1,313 | 983   | 1,612  | 1,738  | 1,047 | 873     | 2,557 |
| 5 Jun  | 434    | 927    | 13    | 428   | 974   | 1,479 | 1,014 | 1,827  | 1,877  | 1,272 | 1,025   | 2,785 |
| 6 Jun  | 434    | 1,319  | 79    | 431   | 976   | 1,541 | 1,179 | 2,050  | 2,565  | 1,322 | 1,190   | 3,091 |
| 7 Jun  | 723    | 2,072  | 81    | 444   | 1033  | 2,340 | 1,569 | 2,696  | 2,565  | 1,445 | 1,497   | 3,317 |
| 8 Jun  | 3,004  | 2,403  | 106   | 448   | 1337  | 2,840 | 1,780 | 3,382  | 3,464  | 1,618 | 2,038   | 4,067 |
| 9 Jun  | 4,104  | 2,707  | 231   | 458   | 1531  | 2,982 | 1,870 | 3,836  | 4,260  | 2,113 | 2,409   | 4,397 |
| 10 Jun | 4,607  | 3,002  | 289   | 1,258 | 1809  | 3,360 | 2,027 | 4,057  | 4,637  | 2,194 | 2,724   | 4,671 |
| 11 Jun | 5,188  | 5,250  | 467   | 1,268 | 1998  | 3,540 | 2,489 | 4,790  | 4,977  | 2,299 | 3,227   | 4,840 |
| 12 Jun | 5,976  | 6,351  | 680   | 1,268 | 2129  | 3,895 | 2,592 | 5,379  | 5,930  | 2,387 | 3,659   | 4,874 |
| 13 Jun | 6,268  | 6,679  | 764   | 1,324 | 2515  | 4,256 | 2,813 | 5,933  | 6,639  | 2,387 | 3,958   | 4,876 |
| 14 Jun | 7,091  | 6,792  | 805   | 1,805 | 2769  | 4,522 | 2,923 | 6,663  | 6,813  | 2,450 | 4,263   | 4,876 |
| 15 Jun | 7,512  | 7,399  | 964   | 1,835 | 3054  | 5,310 | 3,080 | 7,450  | 7,172  | 2,593 | 4,637   | 4,882 |
| 16 Jun | 7,812  | 8,423  | 1,020 | 1,860 | 3,083 | 5,659 | 3,344 | 7,813  | 7,516  | 2,647 | 4,918   | 4,914 |
| 17 Jun | 8,665  | 8,868  | 1,036 | 2,937 | 3,210 | 6,381 | 4,286 | 9,125  | 7,949  | 2,734 | 5,519   | 4,947 |
| 18 Jun | 9,116  | 9,221  | 1,242 | 3,107 | 3,806 | 6,972 | 4,395 | 9,880  | 8,450  | 2,734 | 5,892   | 5,077 |
| 19 Jun | 9,337  | 9,328  | 1,385 | 3,143 | 3,951 | 7,537 | 4,472 | 10,278 | 8,882  | 2,735 | 6,105   | 5,138 |
| 20 Jun | 9,635  | 9,657  | 1,430 | 3,556 | 4,256 | 7,752 | 4,494 | 10,841 | 9,267  | 2,761 | 6,365   | 5,220 |
| 21 Jun | 11,091 | 10,015 | 1,517 | 3,821 | 4,516 | 8,064 | 4,666 | 10,969 | 9,339  | 2,769 | 6,677   | 5,720 |
| 22 Jun | 11,148 | 10,346 | 1,783 | 4,129 | 4,557 | 8,383 | 5,317 | 11,240 | 9,603  | 2,796 | 6,930   | 5,826 |
| 23 Jun | 11,154 | 10,507 | 1,859 | 4,237 | 4,721 | 8,517 | 5,624 | 11,883 | 9,733  | 3,012 | 7,125   | 6,146 |
| 24 Jun | 11,388 | 10,595 | 1,945 | 4,352 | 4,799 | 8,806 | 5,632 | 12,270 | 9,897  | 3,025 | 7,271   | 6,158 |
| 25 Jun | 11,626 | 10,904 | 2,583 | 4,476 | 5,264 | 9,055 | 5,885 | 12,509 | 10,015 | 3,195 | 7,551   | 6,299 |

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Appendix D5.–Page 2 of 4.

| Date   | Year   |        |       |       |       |        |       |        |        |       | Average | 2016   |
|--------|--------|--------|-------|-------|-------|--------|-------|--------|--------|-------|---------|--------|
|        | 2006   | 2007   | 2008  | 2009  | 2010  | 2011   | 2012  | 2013   | 2014   | 2015  |         |        |
| 26 Jun | 11,779 | 11,100 | 2,608 | 4,640 | 5,797 | 9,183  | 5,938 | 12,797 | 10,144 | 3,396 | 7,738   | 6,352  |
| 27 Jun | 11,939 | 11,914 | 2,830 | 4,979 | 6,006 | 9,273  | 6,215 | 13,064 | 10,208 | 3,461 | 7,989   | 6,453  |
| 28 Jun | 12,225 | 11,914 | 3,008 | 5,242 | 6,074 | 9,562  | 6,236 | 13,629 | 10,353 | 3,633 | 8,188   | 6,456  |
| 29 Jun | 12,375 | 12,039 | 3,069 | 5,370 | 6,126 | 9,619  | 6,357 | 13,792 | 10,470 | 3,736 | 8,295   | 6,456  |
| 30 Jun | 12,405 | 12,145 | 3,648 | 5,642 | 6,174 | 9,773  | 6,624 | 13,925 | 10,547 | 4,032 | 8,492   | 6,573  |
| 1 Jul  | 12,442 | 12,243 | 3,745 | 5,666 | 6,201 | 9,791  | 6,699 | 14,039 | 10,631 | 4,183 | 8,564   | 6,865  |
| 2 Jul  | 12,467 | 12,319 | 3,802 | 5,746 | 6,582 | 9,810  | 6,753 | 14,124 | 10,680 | 4,350 | 8,663   | 6,881  |
| 3 Jul  | 12,671 | 12,720 | 4,150 | 5,753 | 7,131 | 9,822  | 6,836 | 14,224 | 10,746 | 4,570 | 8,862   | 6,881  |
| 4 Jul  | 13,108 | 12,951 | 4,235 | 5,756 | 7,131 | 10,059 | 6,910 | 14,272 | 10,825 | 4,717 | 8,996   | 6,924  |
| 5 Jul  | 13,123 | 13,069 | 4,235 | 5,807 | 7,140 | 10,085 | 6,933 | 14,289 | 10,956 | 5,133 | 9,077   | 7,236  |
| 6 Jul  | 13,136 | 13,620 | 4,244 | 5,825 | 7,310 | 10,180 | 6,947 | 14,318 | 11,018 | 5,516 | 9,211   | 7,311  |
| 7 Jul  | 13,142 | 13,659 | 4,281 | 5,903 | 7,387 | 10,221 | 6,992 | 14,404 | 11,185 | 5,550 | 9,272   | 7,377  |
| 8 Jul  | 13,239 | 13,669 | 4,302 | 6,255 | 7,762 | 10,270 | 7,169 | 14,475 | 12,151 | 5,560 | 9,485   | 7,407  |
| 9 Jul  | 14,201 | 13,887 | 4,401 | 6,297 | 8,370 | 10,328 | 7,224 | 14,546 | 12,195 | 5,579 | 9,703   | 8,053  |
| 10 Jul | 14,368 | 14,150 | 4,402 | 6,313 | 8,437 | 10,460 | 7,225 | 14,978 | 12,242 | 5,795 | 9,837   | 8,056  |
| 11 Jul | 14,938 | 14,213 | 4,403 | 6,375 | 8,503 | 10,477 | 7,622 | 15,070 | 12,276 | 5,888 | 9,977   | 8,090  |
| 12 Jul | 15,019 | 14,258 | 4,587 | 6,376 | 8,583 | 10,530 | 7,690 | 15,089 | 12,294 | 5,911 | 10,034  | 8,113  |
| 13 Jul | 15,032 | 14,462 | 4,658 | 6,385 | 8,625 | 10,539 | 7,700 | 15,113 | 12,310 | 5,922 | 10,075  | 8,147  |
| 14 Jul | 15,059 | 14,465 | 4,658 | 6,435 | 8,643 | 10,771 | 7,709 | 15,145 | 12,388 | 5,990 | 10,126  | 8,475  |
| 15 Jul | 15,061 | 14,466 | 4,664 | 6,527 | 9,196 | 10,774 | 7,713 | 15,256 | 12,416 | 6,195 | 10,227  | 8,521  |
| 16 Jul | 15,218 | 14,574 | 4,680 | 6,887 | 9,197 | 10,779 | 7,717 | 15,264 | 12,698 | 6,599 | 10,361  | 8,620  |
| 17 Jul | 15,221 | 14,579 | 4,770 | 6,889 | 9,197 | 10,780 | 7,729 | 15,281 | 12,743 | 6,621 | 10,381  | 8,684  |
| 18 Jul | 15,224 | 14,641 | 4,777 | 6,910 | 9,261 | 10,782 | 7,784 | 15,295 | 12,795 | 6,622 | 10,409  | 9,204  |
| 19 Jul | 15,489 | 14,662 | 4,777 | 6,911 | 9,327 | 10,782 | 7,801 | 15,301 | 12,810 | 6,950 | 10,481  | 9,272  |
| 20 Jul | 15,531 | 14,698 | 4,777 | 6,921 | 9,396 | 10,783 | 7,859 | 15,307 | 13,078 | 6,986 | 10,534  | 9,279  |
| 21 Jul | 15,631 | 14,776 | 4,785 | 7,007 | 9,409 | 10,786 | 7,867 | 15,320 | 13,101 | 7,125 | 10,581  | 9,281  |
| 22 Jul | 15,637 | 14,829 | 4,787 | 7,060 | 9,416 | 10,851 | 7,877 | 15,322 | 13,106 | 7,519 | 10,640  | 9,296  |
| 23 Jul | 15,637 | 14,872 | 4,787 | 7,067 | 9,428 | 10,856 | 7,900 | 15,341 | 13,111 | 7,522 | 10,652  | 9,357  |
| 24 Jul | 15,637 | 15,135 | 4,990 | 7,068 | 9,428 | 10,865 | 7,906 | 15,345 | 13,118 | 7,522 | 10,701  | 9,383  |
| 25 Jul | 15,940 | 15,335 | 5,043 | 7,289 | 9,430 | 10,871 | 7,911 | 15,363 | 13,120 | 7,528 | 10,783  | 9,389  |
| 26 Jul | 15,951 | 15,335 | 5,044 | 7,395 | 9,608 | 10,872 | 7,917 | 15,387 | 13,124 | 7,560 | 10,819  | 9,417  |
| 27 Jul | 15,972 | 15,335 | 5,045 | 7,399 | 9,617 | 10,878 | 7,947 | 15,390 | 13,145 | 7,572 | 10,830  | 9,505  |
| 28 Jul | 16,031 | 15,685 | 5,050 | 7,421 | 9,617 | 10,887 | 7,990 | 15,392 | 13,148 | 7,774 | 10,900  | 9,522  |
| 29 Jul | 16,078 | 15,774 | 5,412 | 7,461 | 9,617 | 10,914 | 7,991 | 15,413 | 13,149 | 7,791 | 10,960  | 9,579  |
| 30 Jul | 16,079 | 15,811 | 5,441 | 7,480 | 9,638 | 10,915 | 8,033 | 15,440 | 13,196 | 7,808 | 10,984  | 9,826  |
| 31 Jul | 16,081 | 15,822 | 5,466 | 7,502 | 9,650 | 10,915 | 8,049 | 15,448 | 13,198 | 7,814 | 10,995  | 10,351 |
| 1 Aug  | 16,094 | 15,827 | 5,486 | 7,516 | 9,652 | 10,916 | 8,049 | 15,530 | 13,200 | 7,835 | 11,011  | 10,369 |
| 2 Aug  | 16,146 | 15,879 | 5,503 | 7,516 | 9,653 | 10,933 | 8,049 | 15,587 | 13,201 | 7,841 | 11,031  | 10,369 |
| 3 Aug  | 16,207 | 15,948 | 5,521 | 7,519 | 9,656 | 10,935 | 8,057 | 15,691 | 13,419 | 7,885 | 11,084  | 10,371 |
| 4 Aug  | 16,264 | 15,979 | 5,538 | 7,572 | 9,656 | 10,935 | 8,077 | 15,732 | 13,425 | 8,174 | 11,135  | 10,378 |
| 5 Aug  | 16,380 | 16,013 | 5,562 | 7,579 | 9,661 | 10,965 | 8,195 | 15,746 | 13,438 | 8,208 | 11,175  | 10,452 |
| 6 Aug  | 16,479 | 16,047 | 5,570 | 7,584 | 9,665 | 10,965 | 8,199 | 15,789 | 13,447 | 8,215 | 11,196  | 10,611 |
| 7 Aug  | 16,606 | 16,073 | 5,578 | 7,596 | 9,666 | 10,965 | 8,199 | 15,789 | 13,450 | 8,288 | 11,221  | 10,632 |
| 8 Aug  | 16,663 | 16,085 | 5,589 | 7,615 | 9,680 | 10,965 | 8,200 | 15,789 | 13,466 | 8,303 | 11,236  | 10,635 |

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Appendix D5.–Page 3 of 4.

| Date   | Year   |        |       |       |       |        |       |        |        |       | Average | 2016   |
|--------|--------|--------|-------|-------|-------|--------|-------|--------|--------|-------|---------|--------|
|        | 2006   | 2007   | 2008  | 2009  | 2010  | 2011   | 2012  | 2013   | 2014   | 2015  |         |        |
| 9 Aug  | 16,776 | 16,104 | 5,592 | 7,635 | 9,680 | 10,965 | 8,207 | 15,809 | 13,647 | 8,375 | 11,279  | 10,635 |
| 10 Aug | 16,818 | 16,132 | 5,608 | 7,637 | 9,682 | 10,985 | 8,208 | 15,833 | 13,698 | 8,394 | 11,300  | 10,646 |
| 11 Aug | 16,876 | 16,146 | 5,639 | 7,643 | 9,682 | 10,987 | 8,211 | 15,837 | 13,710 | 8,413 | 11,314  | 10,646 |
| 12 Aug | 16,918 | 16,162 | 5,660 | 7,644 | 9,682 | 10,987 | 8,240 | 15,844 | 13,720 | 8,423 | 11,328  | 10,653 |
| 13 Aug | 16,963 | 16,175 | 5,661 | 7,647 | 9,683 | 10,988 | 8,242 | 15,848 | 13,730 | 8,448 | 11,339  | 10,655 |
| 14 Aug | 17,017 | 16,197 | 5,858 | 7,658 | 9,698 | 10,993 | 8,414 | 15,851 | 13,739 | 8,458 | 11,388  | 10,765 |
| 15 Aug | 17,059 | 16,217 | 5,862 | 7,659 | 9,709 | 10,993 | 8,452 | 15,858 | 13,749 | 8,465 | 11,402  | 10,775 |
| 16 Aug | 17,077 | 16,219 | 5,875 | 7,663 | 9,710 | 10,994 | 8,453 | 15,859 | 13,751 | 8,470 | 11,407  | 10,789 |
| 17 Aug | 17,109 | 16,226 | 5,878 | 7,668 | 9,720 | 10,995 | 8,453 | 15,893 | 13,753 | 8,512 | 11,421  | 10,926 |
| 18 Aug | 17,150 | 16,269 | 5,882 | 7,674 | 9,739 | 11,024 | 8,454 | 15,936 | 13,754 | 8,526 | 11,441  | 10,961 |
| 19 Aug | 17,186 | 16,285 | 5,882 | 7,683 | 9,751 | 11,251 | 8,455 | 15,947 | 13,761 | 8,536 | 11,474  | 11,010 |
| 20 Aug | 17,238 | 16,286 | 5,882 | 7,689 | 9,755 | 11,254 | 8,455 | 15,955 | 13,763 | 8,550 | 11,483  | 11,024 |
| 21 Aug | 17,281 | 16,295 | 5,883 | 7,693 | 9,761 | 11,263 | 8,460 | 15,957 | 13,764 | 8,553 | 11,491  | 11,044 |
| 22 Aug | 17,304 | 16,303 | 5,883 | 7,700 | 9,761 | 11,274 | 8,460 | 15,962 | 13,772 | 8,554 | 11,497  | 11,053 |
| 23 Aug | 17,332 | 16,314 | 5,886 | 7,701 | 9,764 | 11,290 | 8,464 | 15,972 | 13,776 | 8,556 | 11,506  | 11,062 |
| 24 Aug | 17,457 | 16,328 | 5,887 | 7,703 | 9,766 | 11,292 | 8,465 | 15,998 | 13,791 | 8,559 | 11,525  | 11,068 |
| 25 Aug | 17,495 | 16,339 | 5,889 | 7,706 | 9,766 | 11,369 | 8,465 | 16,001 | 13,801 | 8,560 | 11,539  | 11,069 |
| 26 Aug | 17,522 | 16,347 | 5,889 | 7,708 | 9,769 | 11,561 | 8,465 | 16,003 | 13,813 | 8,563 | 11,564  | 11,075 |
| 27 Aug | 17,571 | 16,380 | 5,890 | 7,716 | 9,769 | 11,684 | 8,466 | 16,013 | 13,817 | 8,578 | 11,588  | 11,085 |
| 28 Aug | 17,586 | 16,380 | 5,890 | 7,716 | 9,771 | 11,795 | 8,466 | 16,013 | 13,838 | 8,584 | 11,604  | 11,099 |
| 29 Aug | 17,607 | 16,380 | 5,890 | 7,728 | 9,771 | 11,801 | 8,466 | 16,023 | 13,842 | 8,586 | 11,609  | 11,125 |
| 30 Aug | 17,656 | 16,394 | 5,890 | 7,731 | 9,771 | 11,806 | 8,466 | 16,024 | 13,845 | 8,587 | 11,617  | 11,130 |
| 31 Aug | 17,668 | 16,400 | 5,892 | 7,731 | 9,772 | 11,816 | 8,467 | 16,024 | 13,845 | 8,588 | 11,620  | 11,137 |
| 1 Sep  | 17,674 | 16,408 | 5,894 | 7,731 | 9,772 | 11,823 | 8,467 | 16,049 | 13,850 | 8,593 | 11,626  | 11,137 |
| 2 Sep  | 17,692 | 16,413 | 5,894 | 7,731 | 9,774 | 11,904 | 8,467 | 16,050 | 13,852 | 8,595 | 11,637  | 11,144 |
| 3 Sep  | 17,699 | 16,424 | 5,898 | 7,732 | 9,775 | 11,950 | 8,467 | 16,064 | 13,853 | 8,599 | 11,646  | 11,157 |
| 4 Sep  | 17,706 | 16,461 | 5,898 | 7,733 | 9,779 | 11,955 | 8,467 | 16,071 | 13,864 | 8,604 | 11,654  | 11,180 |
| 5 Sep  | 17,714 | 16,463 | 5,898 | 7,734 | 9,780 | 11,973 | 8,469 | 16,077 | 13,882 | 8,608 | 11,660  | 11,187 |
| 6 Sep  | 17,719 | 16,473 | 5,898 | 7,734 | 9,780 | 11,973 | 8,470 | 16,142 | 13,886 | 8,612 | 11,669  | 11,206 |
| 7 Sep  | 17,723 | 16,477 | 5,898 | 7,736 | 9,780 | 11,973 | 8,470 | 16,160 | 13,887 | 8,613 | 11,672  | 11,206 |
| 8 Sep  | 17,728 | 16,480 | 5,898 | 7,739 | 9,780 | 11,975 | 8,471 | 16,168 | 13,887 | 8,618 | 11,674  | 11,209 |
| 9 Sep  | 17,728 | 16,480 | 5,898 | 7,743 | 9,780 | 11,979 | 8,471 | 16,175 | 13,900 | 8,621 | 11,678  | 11,229 |
| 10 Sep | 17,730 | 16,484 | 5,898 | 7,743 | 9,781 | 11,979 | 8,472 | 16,178 | 13,905 | 8,624 | 11,679  | 11,235 |
| 11 Sep | 17,732 | 16,486 | 5,898 | 7,745 | 9,781 | 11,980 | 8,474 | 16,179 | 13,905 | 8,626 | 11,681  | 11,236 |
| 12 Sep | 17,734 | 16,488 | 5,898 | 7,747 | 9,781 | 11,982 | 8,478 | 16,179 | 13,947 | 8,627 | 11,686  | 11,238 |
| 13 Sep | 17,734 | 16,491 | 5,898 | 7,747 | 9,783 | 11,982 | 8,479 | 16,180 | 13,961 | 8,628 | 11,688  | 11,241 |
| 14 Sep | 17,734 | 16,491 | 5,898 | 7,747 | 9,785 | 11,982 | 8,479 | 16,180 | 13,961 | 8,631 | 11,689  | 11,243 |
| 15 Sep | 17,734 | 16,491 | 5,898 | 7,748 | 9,787 | 11,982 | 8,481 | 16,180 | 13,967 | 8,641 | 11,691  | 11,249 |
| 16 Sep | 17,734 | 16,492 | 5,898 | 7,749 | 9,787 | 11,982 | 8,486 | 16,180 | 13,969 | 8,647 | 11,692  | 11,256 |
| 17 Sep | 17,734 | 16,493 | 5,898 | 7,750 | 9,787 | 11,982 | 8,490 | 16,180 | 13,972 | 8,654 | 11,694  | 11,256 |
| 18 Sep | 17,734 | 16,494 | 5,898 | 7,751 | 9,788 | 11,982 | 8,500 | 16,183 | 13,972 | 8,658 | 11,696  | 11,256 |
| 19 Sep | 17,734 | 16,495 | 5,898 | 7,751 | 9,788 | 11,982 | 8,521 | 16,186 | 13,974 | 8,660 | 11,699  | 11,259 |
| 20 Sep | 17,734 | 16,496 | 5,898 | 7,753 | 9,788 | 11,982 | 8,528 | 16,186 | 13,974 | 8,669 | 11,701  | 11,260 |

-continued-

Appendix D5.–Page 4 of 4.

| Date   | Year   |        |       |       |       |        |       |        |        |       | Average | 2016   |
|--------|--------|--------|-------|-------|-------|--------|-------|--------|--------|-------|---------|--------|
|        | 2006   | 2007   | 2008  | 2009  | 2010  | 2011   | 2012  | 2013   | 2014   | 2015  |         |        |
| 21 Sep | 17,734 | 16,496 | 5,898 | 7,753 | 9,788 | 11,982 | 8,530 | 16,186 | 13,974 | 8,671 | 11,701  | 11,561 |
| 22 Sep | 17,734 | 16,496 | 5,898 | 7,754 | 9,788 | 11,982 | 8,558 | 16,187 | 13,976 | 8,671 | 11,704  | 11,569 |
| 23 Sep | 17,734 | 16,496 | 5,898 | 7,754 | 9,788 | 11,982 | 8,561 | 16,187 | 13,976 | 8,676 | 11,705  | 11,577 |
| 24 Sep | 17,734 | 16,498 | 5,899 | 7,754 | 9,788 | 11,982 | 8,564 | 16,187 | 13,976 | 8,676 | 11,706  | 11,580 |
| 25 Sep | 17,734 | 16,498 | 5,899 | 7,755 | 9,788 | 11,982 | 8,565 | 16,187 | 13,976 | 8,676 | 11,706  | 11,583 |
| 26 Sep | 17,734 | 16,499 | 5,900 | 7,756 | 9,788 | 11,982 | 8,565 | 16,187 | 13,976 | 8,682 | 11,707  | 11,583 |
| 27 Sep | 17,734 | 16,500 | 5,900 | 7,757 | 9,788 | 11,982 | 8,565 | 16,189 | 13,976 | 8,689 | 11,708  | 11,583 |
| 28 Sep | 17,734 | 16,501 | 5,900 | 7,757 | 9,788 | 11,982 | 8,565 | 16,189 | 13,976 | 8,692 | 11,708  | 11,584 |
| 29 Sep | 17,734 | 16,502 | 5,900 | 7,757 | 9,788 | 11,982 | 8,565 | 16,189 | 13,976 | 8,693 | 11,709  | 11,584 |
| 30 Sep | 17,734 | 16,502 | 5,900 | 7,757 | 9,788 | 11,982 | 8,565 | 16,189 | 13,976 | 8,697 | 11,709  | 11,584 |
| 1 Oct  | 17,734 | 16,502 | 5,900 | 7,757 | 9,797 | 11,982 | 8,565 | 16,189 | 13,976 | 8,697 | 11,710  | 11,584 |

Source: Fuerst 2015: Table 38; B. Fuerst, Fishery Biologist, ADF&G, Kodiak, unpublished data.

Appendix D6.–Saltery River sockeye salmon daily cumulative weir counts, 2002–2003 and 2008–2016.

| Date   | Year   |        |        |        |        |        |        |        |        |        | Average | 2016   |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|--------|
|        | 2002   | 2003   | 2008   | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   |         |        |
| 19 Jun | 0      | 112    | 0      | 0      | 0      | 19     | 0      | 1,033  | 24     | 269    | 146     | 1,338  |
| 20 Jun | 0      | 1,114  | 0      | 0      | 0      | 128    | 0      | 1,261  | 104    | 308    | 292     | 1,416  |
| 21 Jun | 0      | 1,345  | 0      | 0      | 0      | 492    | 246    | 1,284  | 172    | 442    | 398     | 1,442  |
| 22 Jun | 0      | 1,770  | 0      | 0      | 0      | 775    | 451    | 1,427  | 275    | 491    | 519     | 1,503  |
| 23 Jun | 0      | 2,047  | 0      | 0      | 63     | 912    | 860    | 1,538  | 375    | 503    | 630     | 2,049  |
| 24 Jun | 0      | 2,777  | 0      | 141    | 509    | 1,175  | 1,380  | 2,232  | 398    | 558    | 917     | 2,393  |
| 25 Jun | 0      | 3,319  | 0      | 658    | 610    | 1,212  | 2,143  | 3,043  | 405    | 1,434  | 1,282   | 3,356  |
| 26 Jun | 0      | 3,512  | 0      | 1,691  | 674    | 1,421  | 2,974  | 5,949  | 507    | 1,537  | 1,827   | 4,724  |
| 27 Jun | 0      | 4,306  | 200    | 2,222  | 739    | 1,624  | 3,427  | 7,652  | 641    | 1,656  | 2,247   | 5,652  |
| 28 Jun | 0      | 5,287  | 399    | 2,704  | 1212   | 2,103  | 4,024  | 8,889  | 760    | 1,732  | 2,711   | 6,022  |
| 29 Jun | 0      | 7,663  | 589    | 2,950  | 1494   | 2,276  | 4,277  | 9,347  | 814    | 1,886  | 3,130   | 6,798  |
| 30 Jun | 501    | 9,088  | 749    | 3,265  | 1546   | 2,426  | 4,466  | 10,773 | 993    | 1,968  | 3,578   | 8,500  |
| 1 Jul  | 3,247  | 10,106 | 3,473  | 3,413  | 1,586  | 2,520  | 4,847  | 11,807 | 1,002  | 2,118  | 4,412   | 11,015 |
| 2 Jul  | 5,826  | 11,896 | 8,711  | 3,744  | 1,607  | 3,404  | 5,198  | 12,292 | 1,082  | 2,472  | 5,623   | 11,552 |
| 3 Jul  | 11,900 | 12,589 | 9,354  | 4,230  | 1,673  | 4,184  | 5,695  | 12,915 | 1,225  | 2,494  | 6,626   | 12,040 |
| 4 Jul  | 14,021 | 13,544 | 9,921  | 4,384  | 2,693  | 4,492  | 6,020  | 13,596 | 1,279  | 2,870  | 7,282   | 12,537 |
| 5 Jul  | 14,958 | 14,116 | 10,638 | 4,744  | 2,770  | 6,146  | 6,283  | 14,651 | 1,944  | 3,283  | 7,953   | 13,101 |
| 6 Jul  | 15,316 | 16,243 | 10,906 | 5,204  | 3,651  | 7,318  | 6,345  | 14,964 | 3,009  | 5,691  | 8,865   | 13,898 |
| 7 Jul  | 15,468 | 17,250 | 11,194 | 6,796  | 3,933  | 7,715  | 6,895  | 15,422 | 4,182  | 7,049  | 9,590   | 14,350 |
| 8 Jul  | 15,815 | 19,095 | 11,654 | 8,371  | 4,033  | 7,869  | 7,241  | 15,940 | 4,877  | 7,380  | 10,228  | 14,947 |
| 9 Jul  | 15,848 | 20,520 | 12,970 | 9,653  | 4,855  | 8,036  | 7,414  | 17,253 | 5,734  | 7,734  | 11,002  | 15,671 |
| 10 Jul | 15,917 | 21,403 | 13,820 | 10,847 | 5,799  | 8,208  | 7,432  | 17,876 | 6,251  | 8,179  | 11,573  | 16,341 |
| 11 Jul | 16,268 | 22,529 | 14,440 | 11,217 | 6,236  | 8,430  | 7,950  | 18,281 | 6,735  | 8,320  | 12,041  | 17,125 |
| 12 Jul | 16,382 | 23,679 | 15,754 | 11,623 | 6,489  | 9,417  | 8,287  | 19,333 | 7,088  | 8,894  | 12,695  | 18,018 |
| 13 Jul | 16,512 | 24,501 | 19,080 | 12,210 | 7,009  | 9,961  | 9,397  | 20,229 | 7,730  | 10,170 | 13,680  | 19,362 |
| 14 Jul | 16,633 | 25,752 | 20,990 | 13,077 | 8,083  | 12,371 | 10,058 | 21,366 | 8,597  | 11,233 | 14,816  | 20,049 |
| 15 Jul | 16,953 | 28,244 | 21,770 | 14,032 | 8,815  | 13,554 | 10,665 | 21,794 | 11,169 | 11,946 | 15,894  | 20,339 |
| 16 Jul | 17,424 | 29,989 | 22,592 | 14,266 | 9,584  | 13,771 | 11,529 | 22,461 | 12,819 | 13,682 | 16,812  | 21,492 |
| 17 Jul | 17,983 | 31,278 | 23,684 | 14,711 | 10,574 | 14,027 | 12,086 | 23,068 | 14,188 | 15,228 | 17,683  | 22,948 |
| 18 Jul | 18,452 | 32,953 | 24,371 | 15,433 | 11,562 | 14,385 | 12,675 | 24,227 | 16,948 | 16,320 | 18,733  | 24,616 |
| 19 Jul | 20,222 | 34,169 | 24,917 | 16,590 | 13,034 | 14,756 | 13,023 | 25,853 | 17,342 | 18,068 | 19,797  | 25,957 |
| 20 Jul | 20,886 | 35,960 | 26,972 | 17,824 | 14,535 | 14,982 | 14,743 | 26,380 | 18,424 | 19,472 | 21,018  | 28,871 |
| 21 Jul | 21,984 | 38,824 | 27,913 | 20,978 | 14,702 | 15,408 | 16,160 | 26,927 | 18,599 | 22,058 | 22,355  | 31,163 |
| 22 Jul | 22,530 | 40,998 | 28,403 | 21,233 | 15,250 | 16,557 | 17,121 | 27,733 | 19,004 | 24,016 | 23,285  | 34,333 |
| 23 Jul | 23,923 | 43,423 | 29,350 | 21,663 | 15,990 | 17,542 | 17,561 | 28,132 | 21,048 | 25,120 | 24,375  | 35,511 |
| 24 Jul | 24,553 | 45,168 | 31,960 | 24,096 | 16,834 | 18,149 | 17,985 | 29,354 | 22,335 | 25,835 | 25,627  | 39,793 |
| 25 Jul | 25,627 | 46,697 | 34,628 | 27,757 | 16,905 | 19,499 | 19,246 | 30,078 | 22,987 | 26,322 | 26,975  | 42,098 |
| 26 Jul | 27,131 | 47,630 | 34,883 | 29,507 | 17,234 | 20,625 | 19,376 | 31,352 | 23,354 | 28,478 | 27,957  | 43,629 |
| 27 Jul | 27,589 | 49,353 | 35,262 | 30,357 | 17,565 | 21,855 | 20,450 | 32,086 | 24,129 | 30,423 | 28,907  | 45,356 |
| 28 Jul | 28,507 | 50,410 | 36,934 | 32,099 | 19,874 | 23,445 | 21,304 | 32,456 | 24,281 | 31,706 | 30,102  | 47,346 |
| 29 Jul | 29,566 | 51,512 | 39,110 | 34,439 | 20,901 | 23,781 | 21,595 | 32,826 | 25,342 | 33,652 | 31,272  | 51,517 |
| 30 Jul | 30,158 | 52,610 | 40,030 | 35,915 | 23,219 | 25,361 | 22,360 | 33,271 | 25,824 | 34,657 | 32,341  | 52,588 |
| 31 Jul | 31,698 | 53,197 | 40,831 | 37,543 | 23,247 | 26,640 | 22,687 | 33,470 | 26,470 | 35,164 | 33,095  | 55,632 |

-continued-

Appendix D6.–Page 2 of 2.

| Date   | Year   |        |        |        |        |        |        |        |        |        | Average | 2016   |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|--------|
|        | 2002   | 2003   | 2008   | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   |         |        |
| 1 Aug  | 32,771 | 53,591 | 43,231 | 38,444 | 23,297 | 26,916 | 23,517 | 33,519 | 26,553 | 35,273 | 33,711  | 57,431 |
| 2 Aug  | 33,036 | 54,312 | 43,621 | 39,966 | 23,458 | 27,741 | 23,890 | 33,914 | 27,189 | 37,448 | 34,458  | 57,867 |
| 3 Aug  | 33,339 | 54,707 | 44,077 | 40,649 | 23,876 | 27,853 | 24,980 | 35,518 | 27,449 | 39,355 | 35,180  | 57,867 |
| 4 Aug  | 33,580 | 54,959 | 45,578 | 42,421 | 24,287 | 28,065 | 25,774 | 35,952 | 28,100 | 40,422 | 35,914  | 57,867 |
| 5 Aug  | 33,697 | 55,324 | 46,978 | 43,129 | 25,332 | 28,379 | 26,281 | 36,097 | 28,494 | 42,335 | 36,605  | 57,867 |
| 6 Aug  | 33,796 | 55,638 | 47,266 | 43,564 | 25,781 | 29,251 | 26,522 | 39,697 | 29,110 | 42,468 | 37,309  | 57,867 |
| 7 Aug  | 34,088 | 55,926 | 47,266 | 44,034 | 26,466 | 29,747 | 26,683 | 39,697 | 29,307 | 42,468 | 37,568  | 57,867 |
| 8 Aug  | 34,490 | 56,178 | 49,266 | 44,628 | 26,798 | 29,838 | 27,100 | 39,697 | 30,772 | 42,468 | 38,124  | 57,867 |
| 9 Aug  | 34,566 | 56,446 | 49,266 | 45,207 | 26,809 | 29,858 | 27,188 | 39,697 | 31,772 | 42,468 | 38,328  | 57,867 |
| 10 Aug | 34,860 | 56,548 | 49,266 | 45,655 | 26,809 | 30,768 | 28,188 | 39,697 | 31,772 | 42,468 | 38,603  | 57,867 |
| 11 Aug | 34,980 | 56,853 | 49,266 | 45,791 | 26,809 | 30,768 | 28,188 | 39,697 | 31,772 | 42,468 | 38,659  | 57,867 |
| 12 Aug | 35,789 | 57,090 | 49,266 | 46,591 | 26,809 | 30,768 | 28,188 | 39,697 | 31,772 | 42,468 | 38,844  | 57,867 |
| 13 Aug | 35,822 | 57,177 | 49,266 | 46,591 | 26,809 | 30,768 | 28,188 | 39,697 | 31,772 | 42,468 | 38,856  | 57,867 |
| 14 Aug | 35,872 | 57,259 | 49,266 | 46,591 | 26,809 | 30,768 | 28,188 | 39,697 | 31,772 | 42,468 | 38,869  | 57,867 |
| 15 Aug | 35,884 | 57,294 | 49,266 | 46,591 | 26,809 | 30,768 | 28,188 | 39,697 | 31,772 | 42,468 | 38,874  | 57,867 |
| 16 Aug | 35,910 | 57,363 | 49,266 | 46,591 | 26,809 | 30,768 | 28,188 | 39,697 | 31,772 | 42,468 | 38,883  | 57,867 |
| 17 Aug | 35,940 | 57,393 | 49,266 | 46,591 | 26,809 | 30,768 | 28,188 | 39,697 | 31,772 | 42,468 | 38,889  | 57,867 |
| 18 Aug | 35,947 | 57,458 | 49,266 | 46,591 | 26,809 | 30,768 | 28,188 | 39,697 | 31,772 | 42,468 | 38,896  | 57,867 |
| 19 Aug | 35,959 | 57,470 | 49,266 | 46,591 | 26,809 | 30,768 | 28,188 | 39,697 | 31,772 | 42,468 | 38,899  | 57,867 |
| 20 Aug | 35,978 | 57,481 | 49,266 | 46,591 | 26,809 | 30,768 | 28,188 | 39,697 | 31,772 | 42,468 | 38,902  | 57,867 |
| 21 Aug | 35,998 | 57,498 | 49,266 | 46,591 | 26,809 | 30,768 | 28,188 | 39,697 | 31,772 | 42,468 | 38,906  | 57,867 |
| 22 Aug | 35,999 | 57,518 | 49,266 | 46,591 | 26,809 | 30,768 | 28,188 | 39,697 | 31,772 | 42,468 | 38,908  | 57,867 |
| 23 Aug | 36,000 | 57,532 | 49,266 | 46,591 | 26,809 | 30,768 | 28,188 | 39,697 | 31,772 | 42,468 | 38,909  | 57,867 |
| 24 Aug | 36,015 | 57,536 | 49,266 | 46,591 | 26,809 | 30,768 | 28,188 | 39,697 | 31,772 | 42,468 | 38,911  | 57,867 |
| 25 Aug | 36,062 | 57,546 | 49,266 | 46,591 | 26,809 | 30,768 | 28,188 | 39,697 | 31,772 | 42,468 | 38,917  | 57,867 |
| 26 Aug | 36,068 | 57,558 | 49,266 | 46,591 | 26,809 | 30,768 | 28,188 | 39,697 | 31,772 | 42,468 | 38,919  | 57,867 |
| 27 Aug | 36,106 | 57,590 | 49,266 | 46,591 | 26,809 | 30,768 | 28,188 | 39,697 | 31,772 | 42,468 | 38,926  | 57,867 |
| 28 Aug | 36,116 | 57,593 | 49,266 | 46,591 | 26,809 | 30,768 | 28,188 | 39,697 | 31,772 | 42,468 | 38,927  | 57,867 |
| 29 Aug | 36,128 | 57,993 | 49,266 | 46,591 | 26,809 | 30,768 | 28,188 | 39,697 | 31,772 | 42,468 | 38,968  | 57,867 |
| 30 Aug | 36,171 | 57,993 | 49,266 | 46,591 | 26,809 | 30,768 | 28,188 | 39,697 | 31,772 | 42,468 | 38,972  | 57,867 |
| 31 Aug | 36,183 | 57,993 | 49,266 | 46,591 | 26,809 | 30,768 | 28,188 | 39,697 | 31,772 | 42,468 | 38,974  | 57,867 |
| 1 Sep  | 36,195 | 57,993 | 49,266 | 46,591 | 26,809 | 30,768 | 28,188 | 39,697 | 31,772 | 42,468 | 38,975  | 57,867 |
| 2 Sep  | 36,214 | 57,993 | 49,266 | 46,591 | 26,809 | 30,768 | 28,188 | 39,697 | 31,772 | 42,468 | 38,977  | 57,867 |
| 3 Sep  | 36,218 | 57,993 | 49,266 | 46,591 | 26,809 | 30,768 | 28,188 | 39,697 | 31,772 | 42,468 | 38,977  | 57,867 |
| 4 Sep  | 36,227 | 57,993 | 49,266 | 46,591 | 26,809 | 30,768 | 28,188 | 39,697 | 31,772 | 42,468 | 38,978  | 57,867 |
| 5 Sep  | 36,229 | 57,993 | 49,266 | 46,591 | 26,809 | 30,768 | 28,188 | 39,697 | 31,772 | 42,468 | 38,978  | 57,867 |
| 6 Sep  | 36,238 | 57,993 | 49,266 | 46,591 | 26,809 | 30,768 | 28,188 | 39,697 | 31,772 | 42,468 | 38,979  | 57,867 |
| 7 Sep  | 36,257 | 57,993 | 49,266 | 46,591 | 26,809 | 30,768 | 28,188 | 39,697 | 31,772 | 42,468 | 38,981  | 57,867 |
| 8 Sep  | 36,312 | 57,993 | 49,266 | 46,591 | 26,809 | 30,768 | 28,188 | 39,697 | 31,772 | 42,468 | 38,986  | 57,867 |
| 9 Sep  | 36,324 | 57,993 | 49,266 | 46,591 | 26,809 | 30,768 | 28,188 | 39,697 | 31,772 | 42,468 | 38,988  | 57,867 |
| 10 Sep | 36,335 | 57,993 | 49,266 | 46,591 | 26,809 | 30,768 | 28,188 | 39,697 | 31,772 | 42,468 | 38,989  | 57,867 |

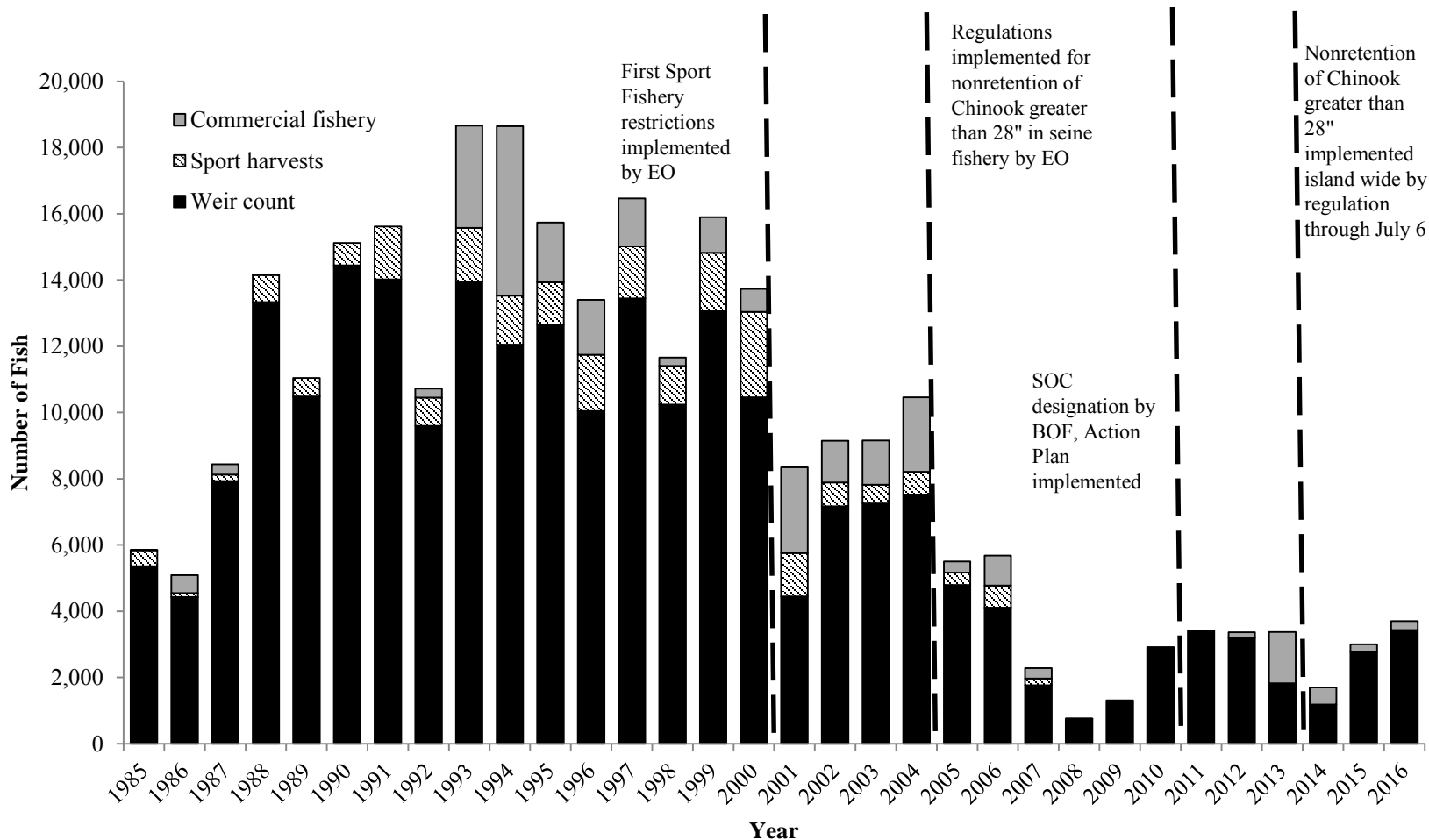
Source: Fuerst 2015: Table 44; B. Fuerst, Fishery Biologist, ADF&G, Kodiak, unpublished data.





**APPENDIX E: KARLUK AND AYAKULIK RIVERS  
CHINOOK SALMON WEIR COUNTS AND SPORT AND  
COMMERCIAL HARVESTS, 1985–2016**

# Karluk River Chinook Salmon



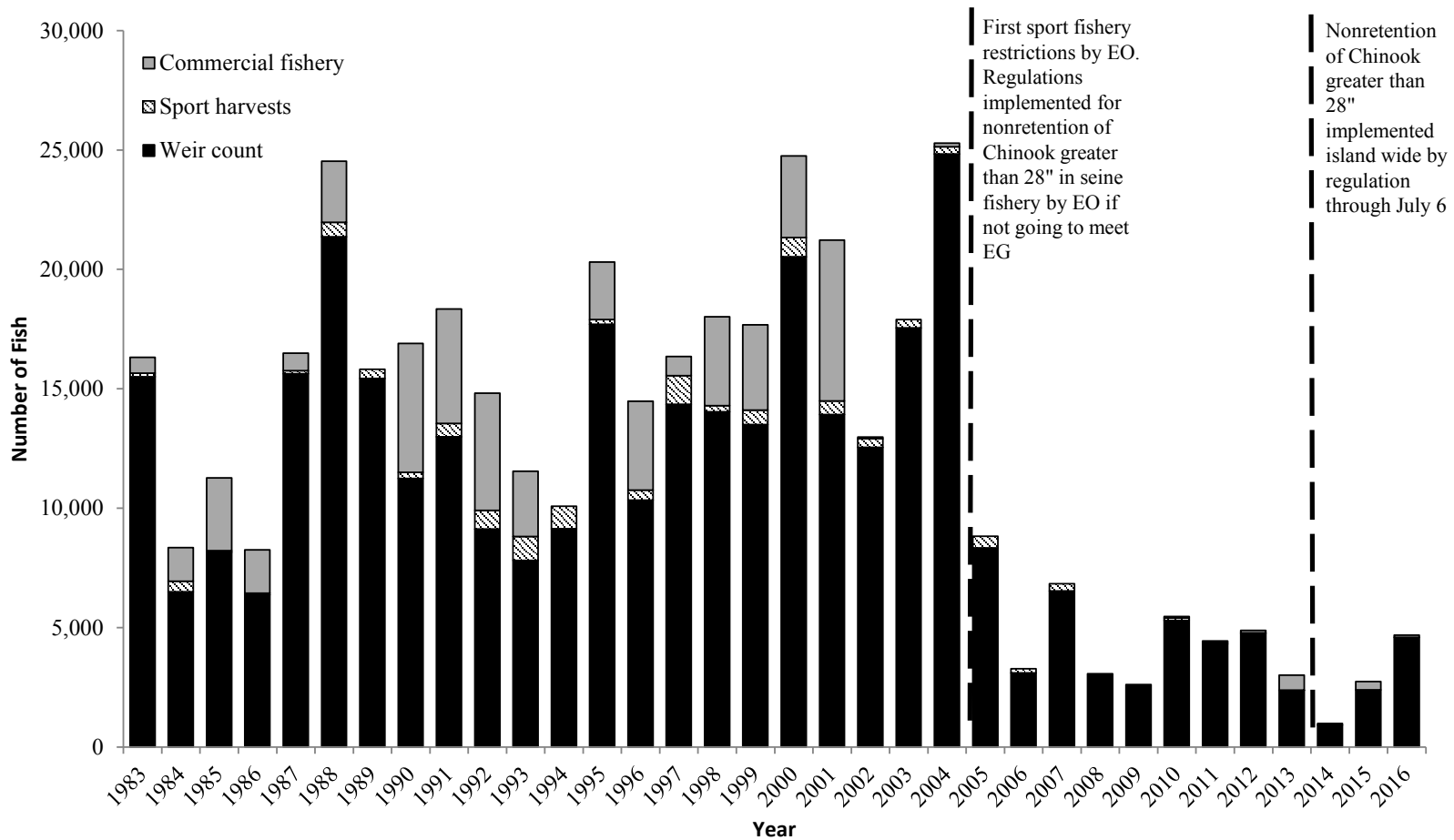
Appendix E1.—Karluk River Chinook salmon weir counts and sport and commercial harvests, 1985–2016.

Source: Statewide Harvest Survey (SWHS) estimates from the Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2016). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>. Schwarz et al. 2002.

Note: Sport harvests represent total sport harvests. Commercial harvest from Inner and Outer Karluk sections through 15 July are assumed to be Karluk bound.

## Ayakulik River Chinook Salmon

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Appendix E2.—Ayakulik River Chinook salmon weir counts and sport and commercial harvests, 1983–2016.

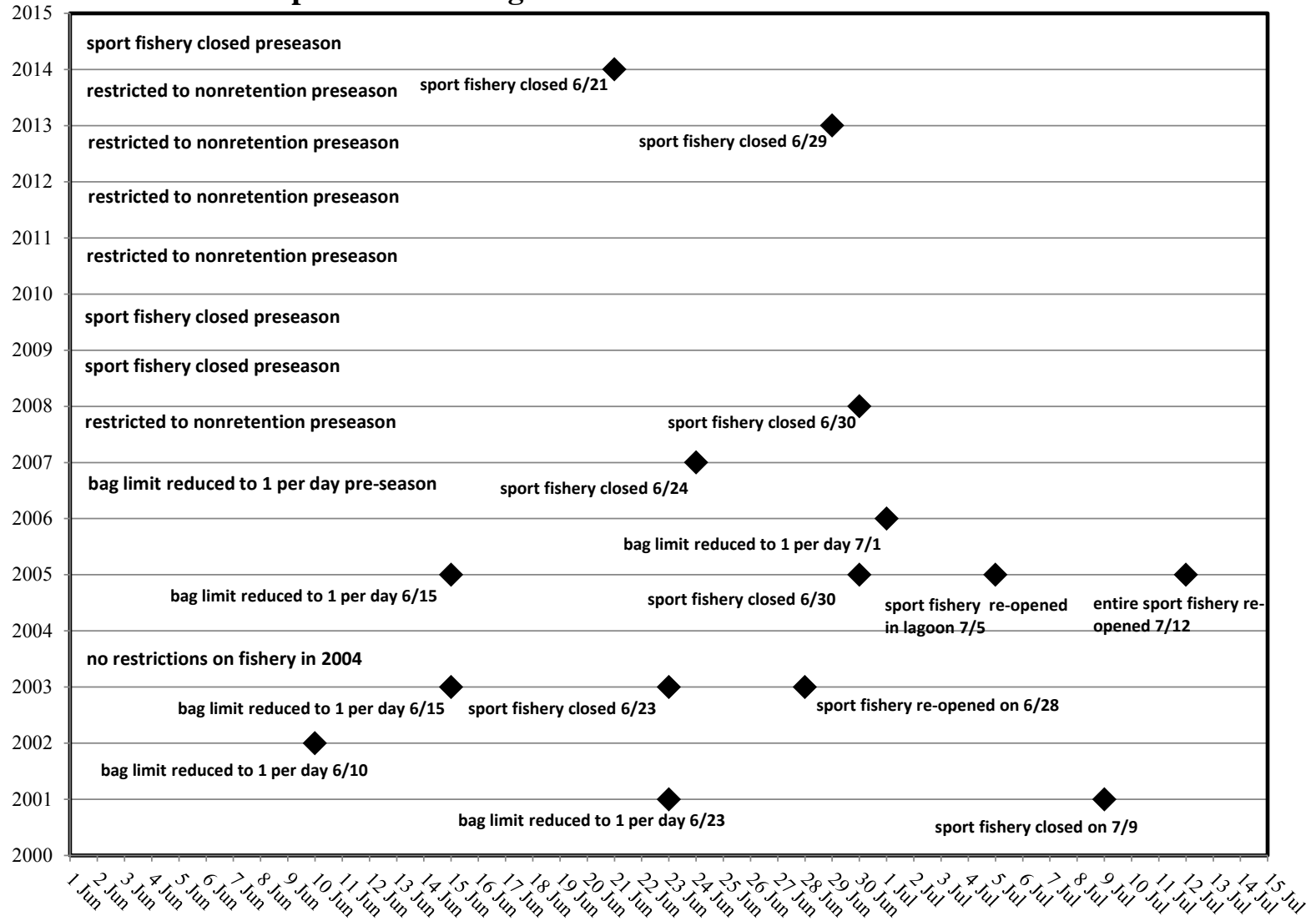
Source: Statewide Harvest Survey (SWHS) estimates from the Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2016). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>. Schwarz, et. al. 2002.

Note: Sport harvests represent total sport harvests, unavailable for 2016. Commercial harvest from Inner and Outer Ayakulik sections through July 15 are assumed to be Ayakulik bound.



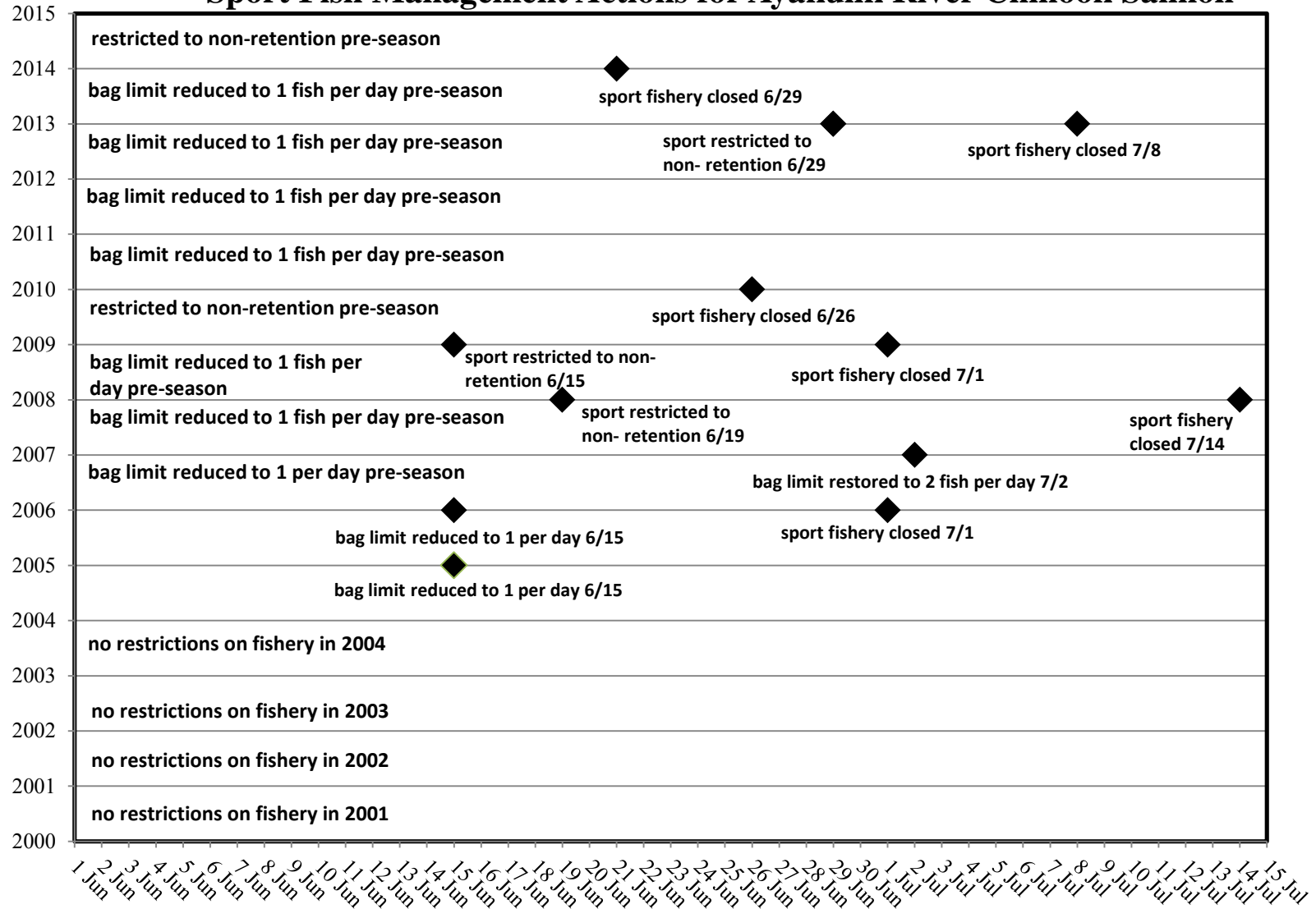
**APPENDIX F: HISTORY OF FISHERY MANAGEMENT OF  
THE KARLUK AND AYAKULIK RIVERS CHINOOK  
SALMON RUNS**

## Sport Fish Management Actions for Karluk River Chinook Salmon



Appendix F1.—History of management of the Karluk River Chinook salmon sport fishery.

## Sport Fish Management Actions for Ayakulik River Chinook Salmon



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Appendix F2.—History of management of Ayakulik River Chinook salmon sport fishery.

Appendix F3.—Actions taken by the BOF to address declining Chinook salmon runs to the Karluk River and the “stock of concern” designation.

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**5AAC 18.395. Retention of king<sup>9</sup> salmon taken in a commercial fishery.** a) In the Inner Karluk, Outer Karluk, Inner Ayakulik, and Outer Ayakulik Sections, if the department determines that the king salmon runs will not meet seasonal escapement goals, the commissioner may, by emergency order, close the commercial salmon fishery and immediately reopen the commercial salmon fishery, during which king salmon 28 inches or greater in length may not be retained, and king salmon 28 inches or greater in length taken incidentally in the commercial salmon fishery must be returned to the water unharmed.

(b) Before July 30, if the department projects that the Karluk River biological escapement goal will not be met and the sport fishery is restricted in the Karluk watershed to the nonretention of king salmon or the sport fishery for king salmon is closed, the commissioner shall, by emergency order, close the commercial salmon seine fishery season in the waters south of a line from Cape Kuliuk at lat 57° 48.20'N, to the southern boundary of the Inner Ayakulik Section by the latitude of Low Cape, and immediately reopen a commercial salmon seine fishery season during which

(1) king salmon 28 inches or greater in length may not be retained; and

(2) king salmon 28 inches or greater in length taken incidentally must be returned to the water unharmed.

(c) In addition to the other provisions in this section, in the Kodiak Area, from June 1 through July 5, king salmon 28 inches or greater in length taken during the commercial salmon seine fishery may not be retained and must be immediately returned to the water. The provisions of this subsection do not apply after December 31, 2016.

**5 AAC 28.450. Closed waters in Kodiak Area.**

(e) The waters of Alaska in the Kodiak Area that are approximately three miles on either side of the mouth of the Karluk River bounded on the north by a line from lat 57°36.26'N, lon 154°23.73'W, to a point at the state waters boundary at lat 57°38.51'N, lon 154°27.92'W, and bounded on the south by a line from lat 57°32.34'N, lon 154°32.15'W, to a point at the state waters boundary at lat 57°34.84'N, lon 154°36.80'W are closed to fishing with trawl gear.

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<sup>9</sup> In the regulatory language, Chinook salmon are called “king” salmon, “the board” refers to the Alaska Board of Fisheries, and “the department” refers to the Alaska Department of Fish and Game.



**APPENDIX G: ADF&G AND KRAA SPORTFISH  
ENHANCEMENT RELEASES IN THE KODIAK ROAD  
ZONE**

Appendix G1.–Estimated Kodiak Management Area anadromous waters stockings by species and location, 2006–2016.

| Species                | Location           | Year   |         |         |         |         |         |         |         |         |         |         |
|------------------------|--------------------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
|                        |                    | 2006   | 2007    | 2008    | 2009    | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    |
| Coho salmon fingerling |                    |        |         |         |         |         |         |         |         |         |         |         |
|                        | Dark L.            | 3,976  | 7,479   | 7,495   | 7,491   | 8,235   | 7,500   | 7,500   | 7,767   | 7,500   | 0       | 0       |
|                        | Island L.          | 12,097 | 30,922  | 22,495  | 22,497  | 24,731  | 22,500  | 22,500  | 25,000  | 31,481  | 0       | 0       |
|                        | Mayflower L.       | 0      | 5,008   | 6,469   | 6,836   | 7,150   | 6,500   | 6,500   | 6,488   | 6,500   | 0       | 0       |
|                        | Mission L.         | 6,614  | 12,487  | 12,482  | 12,484  | 13,724  | 12,500  | 12,500  | 13,394  | 13,141  | 0       | 0       |
|                        | Potatoe Patch L.   | 5,012  | 5,008   | 9,484   | 9,483   | 10,429  | 9,500   | 9,500   | 10,391  | 10,192  | 0       | 0       |
|                        | Total              | 27,699 | 60,904  | 58,425  | 58,791  | 64,269  | 58,500  | 58,500  | 63,040  | 68,814  | 0       | 0       |
| Coho salmon smolt      |                    |        |         |         |         |         |         |         |         |         |         |         |
|                        | Big–Kings Diner L. | 9,534  | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       |
|                        | Dark L.            | 0      | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       |
|                        | Island L.          | 22,071 | 8,451   | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 30,056  |
|                        | Mission            | 0      | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 20,023  |
|                        | Monashka Creek     | 10,000 | 0       | 0       | 0       | 0       | 45,216  | 34,765  | 28,020  | 0       | 0       | 99,582  |
|                        | Pillar Creek       | 0      | 0       | 0       | 0       | 0       | 47,014  | 28,936  | 28,070  | 0       | 0       | 139,401 |
|                        | Total              | 41,605 | 8,451   | 0       | 0       | 0       | 92,230  | 63,701  | 56,090  | 0       | 0       | 289,062 |
| Chinook salmon smolt   |                    |        |         |         |         |         |         |         |         |         |         |         |
|                        | Monashka Creek     | 29,153 | 46,825  | 68,100  | 79,000  | 82,000  | 39,000  | 39,279  | 51,207  | 70,000  | 73,272  | 0       |
|                        | American River     | 0      | 28,156  | 40,000  | 51,000  | 80,000  | 10,000  | 39,740  | 50,072  | 70,000  | 75,272  | 0       |
|                        | Olds River         | 0      | 28,313  | 40,000  | 52,000  | 80,000  | 10,000  | 39,300  | 40,000  | 70,000  | 75,044  | 0       |
|                        | Salonie Creek      | 0      | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 62,561  | 71,042  | 29,800  |
|                        | Total              | 29,153 | 103,294 | 148,100 | 182,000 | 242,000 | 59,000  | 118,319 | 141,279 | 272,561 | 294,630 | 29,800  |
| Grand Total            |                    | 98,457 | 172,649 | 206,525 | 240,791 | 306,269 | 209,730 | 240,520 | 260,409 | 341,375 | 294,630 | 318,862 |

Source: ADF&G SF Kodiak Area Office data archives.

Appendix G2.–Estimated Kodiak Management Area landlocked lake stockings by species and location, 2006–2016.

| Species            | Location           | Year          |               |               |                |               |               |                |               |                |                |                |
|--------------------|--------------------|---------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|----------------|----------------|----------------|
|                    |                    | 2006          | 2007          | 2008          | 2009           | 2010          | 2011          | 2012           | 2013          | 2014           | 2015           | 2016           |
| Rainbow trout      | Abercrombie        | 2,580         | 4,700         | 4,810         | 5,051          | 4,656         | 5,142         | 4,972          | 6,162         | 2,550          | 7,059          | 8,403          |
|                    | Aurel L.           | 2,145         | 3,000         | 3,900         | 4,095          | 3,964         | 4,169         | 3,975          | 3,464         | 0              | 6,400          | 7,563          |
|                    | Big–Kings Diner L. | 2,666         | 4,600         | 4,680         | 4,914          | 4,824         | 5,003         | 4,185          | 4,915         | 2,747          | 8,847          | 10,084         |
|                    | Bull L.            | 1,290         | 3,000         | 2,600         | 2,730          | 2,685         | 2,779         | 2,643          | 3,038         | 3,312          | 4,471          | 5,294          |
|                    | Caroline L.        | 975           | 1,900         | 1,820         | 1,911          | 1,854         | 1,946         | 1,865          | 2,154         | 2,647          | 3,700          | 4,286          |
|                    | Cicely L.          | 855           | 1,700         | 1,560         | 1,638          | 1,587         | 1,668         | 1,826          | 1,138         | 2,794          | 4,050          | 4,538          |
|                    | Dark L.            | 0             | 0             | 0             | 0              | 0             | 5,003         | 4,879          | 6,123         | 2,535          | 8,824          | 10,588         |
|                    | Dolgoi L.          | 2,064         | 3,462         | 5,200         | 4,055          | 5,287         | 0             | 0              | 0             | 0              | 0              | 0              |
|                    | Dragonfly L.       | 865           | 2,100         | 2,080         | 2,184          | 2,110         | 2,224         | 2,215          | 2,215         | 1,471          | 4,353          | 5,294          |
|                    | Heitman L.         | 2,150         | 3,352         | 4,932         | 4,455          | 4,952         | 4,586         | 4,457          | 5,000         | 5,005          | 6,824          | 7,983          |
|                    | Horseshoe L.       | 870           | 1,500         | 1,300         | 1,365          | 1,326         | 1,390         | 1,336          | 1,408         | 0              | 2,824          | 6,723          |
|                    | Island L.          | 0             | 0             | 0             | 0              | 0             | 5,559         | 5,378          | 6,538         | 2,559          | 8,941          | 10,588         |
|                    | Jack L.            | 865           | 1,500         | 1,300         | 1,365          | 1,319         | 0             | 0              | 0             | 0              | 0              | 0              |
|                    | Jupiter L.         | 2,322         | 2,253         | 3,702         | 4,860          | 3,923         | 0             | 0              | 0             | 0              | 0              | 0              |
|                    | Lee L.             | 2,159         | 3,300         | 3,640         | 3,822          | 3,700         | 3,891         | 3,668          | 3,250         | 0              | 5,950          | 6,723          |
|                    | Lilly Pad L.       | 946           | 11,124        | 1,430         | 2,184          | 2,055         | 2,224         | 2,102          | 2,692         | 3,369          | 4,176          | 4,874          |
|                    | Long L.            | 2,150         | 3,791         | 4,680         | 3,658          | 3,556         | 6,580         | 4,220          | 4,398         | 4,371          | 7,100          | 8,403          |
|                    | Long Lagoon L.     | 0             | 0             | 0             | 0              | 0             | 0             | 2,451          | 3,571         | 4,731          | 0              | 0              |
|                    | Margaret L.        | 1,032         | 0             | 0             | 0              | 0             | 0             | 0              | 0             | 0              | 0              | 0              |
|                    | Mosquito L.        | 0             | 0             | 0             | 0              | 0             | 3,335         | 1,576          | 1,490         | 2,191          | 2,800          | 1,681          |
| Saturn L.          | 1,548              | 3,462         | 3,005         | 3,240         | 2,523          | 0             | 0             | 0              | 0             | 0              | 0              |                |
| Tanignak L.        | 2,064              | 3,736         | 5,200         | 4,055         | 5,283          | 7,420         | 6,882         | 4,872          | 4,457         | 7,200          | 8,403          |                |
| Twin L.            | 2,535              | 5,000         | 5,200         | 5,460         | 5,447          | 5,559         | 5,547         | 5,363          | 5,562         | 8,388          | 10,756         |                |
|                    | <b>Total</b>       | <b>32,081</b> | <b>63,480</b> | <b>61,039</b> | <b>61,042</b>  | <b>61,051</b> | <b>68,478</b> | <b>64,177</b>  | <b>67,791</b> | <b>50,301</b>  | <b>101,907</b> | <b>122,184</b> |
| Coho salmon        | Abercrombie        | 3,486         | 3,472         | 3,486         | 0              | 3,839         | 3,500         | 3,500          | 3,505         | 3,465          | 0              | 0              |
|                    | Barry Lagoon       | 0             | 0             | 0             | 0              | 0             | 24,910        | 30,000         | 22,059        | 22,500         | 0              | 0              |
|                    | Big–Kings Diner L. | 5,257         | 5,008         | 0             | 0              | 10,973        | 0             | 0              | 10,916        | 10,655         | 0              | 0              |
|                    | Chiniak L.         | 0             | 11,018        | 14,557        | 20,437         | 22,000        | 0             | 0              | 0             | 0              | 0              | 0              |
|                    | Margaret L.        | 3,499         | 0             | 0             | 0              | 0             | 0             | 0              | 0             | 0              | 0              | 0              |
|                    | Southern L.        | 0             | 3,280         | 3,485         | 3,495          | 3,838         | 0             | 0              | 0             | 0              | 0              | 0              |
|                    | <b>Total</b>       | <b>12,242</b> | <b>22,778</b> | <b>21,528</b> | <b>23,932</b>  | <b>40,650</b> | <b>28,410</b> | <b>33,500</b>  | <b>36,480</b> | <b>36,620</b>  | <b>0</b>       | <b>0</b>       |
| <b>Grand total</b> | <b>44,323</b>      | <b>86,258</b> | <b>82,567</b> | <b>84,974</b> | <b>101,701</b> | <b>96,888</b> | <b>97,677</b> | <b>104,271</b> | <b>86,921</b> | <b>101,907</b> | <b>122,184</b> |                |

Source: ADF&G SF Kodiak Area Office data archives.